UNDER EMBARGO UNTIL 22:01 GMT ON WEDNESDAY 27 NOVEMBER 2013.

International Labour Office

THE IMPACT OF **EMPLOYMENT** ON **HIV** TREATMENT ADHERENCE

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THE IMPACT OF **EMPLOYMENT** ON **HIV** TREATMENT ADHERENCE

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral therapy
CD4	Cluster of Differentiation 4
CEO	Chief Executive Officer
CI	Confidence Intervals
HIV	Human Immunodeficiency Virus
IATT	Inter-Agency Task Team
ILO	International Labour Organization
NAC	National AIDS Commission
NLM	National Library of Medicine
OR	Odds Ratio
PLHIV	People living with HIV
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SCI	Science Citation Index
UNAIDS	Joint United Nations Programme on HIV/AIDS
VAS	Visual Analogue Scale
WHO	World Health Organization

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FOREWORD

The scale up of HIV treatment over the past five years has completely transformed the global response to HIV and AIDS and the medical management of HIV infection. Globally, the number of people receiving HIV treatment has tripled over the last five years. At the end of 2012, there were nearly 10 million people on antiretroviral therapy in low and middle income countries. In 2012, the number of people newly starting HIV treatment was 1.6 million, which is the highest figure ever recorded for a single year.

In recent years, the world has strengthened its commitment to scaling up treatment. In 2011, the United Nations member States reaffirmed and committed themselves to redouble their efforts to address HIV and AIDS. The 2011 United Nations Political Declaration on HIV and AIDS states that member States "Commit to accelerate efforts to achieve the goal of universal access to antiretroviral treatment for those eligible based on the WHO HIV treatment guidelines that indicate timely initiation of quality assured treatment for its maximum benefit, with the target of working towards having 15 million people living with HIV on antiretroviral treatment by 2015".

In 2010, the member States of the ILO adopted the Recommendation concerning HIV and AIDS and the World of Work (No. 200) which demonstrated the unequivocal commitment by the ILO's constituency to contribute towards increasing access to HIV services, including treatment services. Recommendation No. 200 states that the workplace offers a valuable entry point to reach women and men workers in settings where they spend much of their lives, and calls for all governments to ensure that all workers, including workers living with HIV, have access to free or affordable antiretroviral treatment, education, information and support.

Today, we know more about the benefits of treatment than ever before. Available evidence today points to the fact that HIV treatment is one of the most effective approaches to preventing HIV transmission in children, HIV transmission soon after exposure (post exposure prophylaxis), HIV transmission prior to exposure (pre-exposure prophylaxis) and new HIV infections in all populations (treatment as prevention). The prevention benefits of HIV treatment are very well documented.

Despite the considerable progress made, consideration needs to be given to the fact that challenges remain. For treatment to be optimally effective, we must improve and maintain adherence while minimizing loss to follow-up across the treatment continuum. Gaps exist at each stage of the HIV treatment continuum from diagnosis to linkage to care to receipt of antiretroviral therapy to retention in care. Currently, UNAIDS estimates that less than one in four people living with HIV in Sub-Saharan Africa have achieved durable viral suppression.

This study is novel, timely and focuses on one key step of the HIV treatment cascade: *adherence to antiretroviral therapy.* If patients can adhere to HIV treatment, the optimal benefits of HIV

medication will be realized. Specifically this study sought to assess whether there is a relationship between the employment status of a person living with HIV and their adherence to HIV treatment. It is hoped that the findings of this study will contribute immensely to the body of knowledge on treatment adherence and inform the decisions of in-country HIV and AIDS Programme Managers and Policy Makers, Ministries of Labour, Employers' organizations, Workers' organizations, Networks of people living with HIV and world of work stakeholders in their design and implementation of HIV policies and programmes.

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EXECUTIVE SUMMARY

In 2013 the ILO commissioned a team of independent researchers, managed by the ILO HIV and AIDS and the World of Work Branch (ILOAIDS) to assess the evidence on the relationship between the employment status of people living with HIV and their adherence to treatment.

SYSTEMATIC REVIEW APPROACH

The study review was undertaken in two parts. The first component was based on a systematic review of existing studies that had looked at the association between the employment status of people living with HIV (PLHIV) and adherence to HIV medications. The following electronic databases were searched: MEDLINE, EMBASE, SCI Web of Science, NLM Gateway and Google scholar databases. In addition, manual searches of retrieved article bibliographies were conducted. Two independent reviewers extracted data on adherence and study characteristics and synthesized the results across studies.

The independent researchers attempted to address the following broad questions: Assess the evidence on the relationship between employment status of a person living with HIV and their adherence to treatment; assess the gender dimensions of the relationship between employment status and treatment adherence (the differential impact of employment on treatment adherence for women and men); generate understanding on how employment contributes (or otherwise) to treatment adherence (e.g., effect of employment on mental health, physical health, financial independence, etc.); and assess whether different types of employment or jobs have different impacts on treatment adherence.

KEY INFORMANT INTERVIEWS

The second step involved the development of a data-gathering questionnaire and subsequent telephone interviews with identified stakeholders. Persons from an identified number of countries interviewed (by phone) included representatives of: the Inter Agency Task Team (IATT) on Treatment; WHO; networks of People living with HIV; ILO constituents; and National AIDS Commissions (NACs). All telephone interviews were arranged by ILOAIDS. ILOAIDS also identified countries in which key informants will be recruited. The telephone interviews took into consideration the gender dimensions of key informants.

Interviews were conducted in English by one of the independent researchers and transcribed. Each interview session lasted approximately one hour. The transcripts were used for content analysis to identify the main themes and were then coded for retrieval and qualitative analysis. Selected quotations were used to illustrate the themes in this report.

The overall goal of the key informant interviews was to collect additional information on the knowledge, perception and attitudes of selected stakeholders with the view to: assess the effect of employment status of people living with HIV on

antiretroviral (ART) adherence; investigate any gender dimension of the relationship between employment status and ART adherence; assess whether different types of employment differently affect HIV treatment adherence; and evaluate whether ART adherence positively or negatively affects access or maintenance of employment.

FINDINGS & CONCLUSIONS

Twenty three studies involving 6,674 people living with HIV were included in the systematic review. All studies are presented in Table 1. When the results were pooled together statistically, it was found that respondents who were employed at the time of the study were 39 per cent (could range from 13 per cent to 71 per cent) more likely to have achieved optimal antiretroviral adherence than those unemployed. No evidence was found on statistically significant differentials in the association between employment status and optimal ART adherence by publication year, a country's income group, adherence measures, percentage of males, unemployment rates or adherence rates.

Overwhelmingly, all key informants reported that employment is likely to positively impact on ART adherence by providing food security and financial security to cope with structural barriers such as lack of transport, or money to attend clinic visits, collect pharmacy refills and make out-of-pocket payments for any other health services at public health sites or in the workplace. It was found that in many developing countries, people who were living with HIV and were unemployed lacked financial security for their basic needs. All key informants interviewed agreed that perceived HIV stigma will lead to non-disclosure of the patient's HIV status and negatively impact on ART adherence in the workplace and that patients who are not open about their HIV status are more likely to miss ART doses while trying to avoid being seen taking ART by their peers or the employer. A majority of respondents reported that when being put in the same situation of employment (or unemployment), women are more likely to adhere to ART than men. Eight out 12 key informants agreed that employment could negatively impact on ART adherence in both informal and formal work settings. Informal work could be mostly affected by structural barriers for ART adherence and the formal workplace could be affected by issues related to stigma/fears of discrimination. It was noted that sometimes HIV patients who experience health challenges may have a more competitive mindset to compete for jobs than apparently "healthy looking" people living with HIV.

IMPLICATIONS FOR FUTURE RESEARCH

The present review is unable to address all questions pertinent to the association between employment status and optimal adherence. Further research is needed in the following areas: to better identify how employment contributes to treatment adherence; assess whether different types of employment or jobs have different impacts of treatment adherence; investigate how employment creation programmes can positively impact HIV treatment adherence, disease progression and quality of life; assess the impact of ART regimen simplification on satisfaction, quality of life and fear of HIV-related stigma and discrimination at the workplace; and undertake cost-benefit and cost-effectiveness studies to evaluate the above interventions.

RECOMMENDATIONS:

1) Health and development organizations should promote livelihood interventions to improve health with economic outcomes for people living with HIV (PLHIV) and receiving antiretroviral therapy (ART).

2) There is the need to improve national level efforts to develop new anti-discrimination policies, enforce existing anti-discrimination laws, reduce HIV-related stigma, and expand accessibility to health services to mitigate many of the barriers discussed by the key informants to improve adherence.

3) Implement conditional economic and nutritional incentives as a measure to enhance treatment adherence. There is evidence to support the fact that economic and nutritional incentives can help patients to improve upon their adherence to HIV treatment.

4) HIV care must and can be improved by extending and establishing flexible clinic hours in the public sector in the context of insecure labor conditions and fragile livelihoods. This would serve to enhance the uptake of services.

5) Employers take steps to accommodate people living with HIV who may need a modification of their work arrangements. When necessary, some adaptation should be provided in the workplace to reduce some ARV adverse drug events that may affect work performance.

6) Governments must take the necessary steps to strengthen health systems and the training and retention of health workers, if treatment is to be sustainable.

7) Workplaces should invest in implementing anti-discrimination policies; the same workplace that can enhance treatment adherence can also contribute to making workers less adherent if stigma and discrimination persists.

8) Existing Social Protection schemes should be assessed and made HIV-sensitive to enhance the likelihood of people living with HIV receiving the necessary support to remain on treatment. This is even more important when people are unemployed and when financial insecurity persists.

9) Employers (public or private) have a critical role to play in ensuring that workers living with HIV are able to take time off to visit health facilities for their medication without having to always explain. Employers must reasonably accommodate workers living with HIV if treatment adherence is to be enhanced. This should be reflected in workplace policy.

10) Employers must understand that the first few months after initiation of ART appear to be the most challenging. Employers must create conducive environments where workers living with HIV who commence treatment are supported to adhere to treatment.

11) The approach to addressing treatment adherence must be comprehensive and include legal and policy, health service, workplace, social protection and many other considerations. Confidentiality issues are also critical in dealing with the issue of treatment adherence in the workplace.

BACKGROUND AND RATIONALE

According to the latest WHO/UNAIDS estimates, access to HIV treatment and care services in low- and middle-income countries has expanded dramatically (WHO, 2013). In 2012, more than 9.7 million people living with HIV were receiving antiretroviral therapy (ART) in low- and middle-income countries (WHO, 2013). According to WHO 2013 antiretroviral guidelines, at the end of 2012, 25.9 million persons were eligible for ART (WHO, 2013). The 9.7 million people receiving ART at the end of 2012 represented 65 per cent of the 15 million target by the United Nations, up from 54 per cent in 2011 (WHO, 2013). Prevention of vertical transmission includes treatment coverage of women living with HIV and resulted in lower rates of HIV transmission from mothers to children (WHO, 2013). In the area of employment, gender roles and inequalities produce significant outcomes in adherence to treatment for HIV depending on whether it is in the formal or informal economy (Berg et al., 2004, Arrivillaga et al., 2009, de Fatima Bonolo et al., 2013).

The 2011 Political Declaration on HIV and AIDS builds on the enormous progress made during the past decade, establishing bold and ambitious targets for 2015 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2011). The target for 2015 is to increase access to ART to get 15 million people on life saving treatment by 2015 (UNAIDS, 2011). In recent times, the role of treatment has become even more important since a stronger relationship between treatment and prevention has been established (WHO, 2013). Treatment as prevention is a term increasingly used to describe the benefits of antiretroviral treatment to decrease the chance of HIV transmission (WHO, 2013). The UNAIDS Secretariat and WHO have launched the Treatment 2.0, an initiative designed to achieve and sustain universal access and maximize the preventive benefits of ART (WHO, 2013).

Even though the number of people on treatment has increased, treatment adherence continues to pose significant challenges. WHO defines treatment adherence as "the extent to which a person's behaviour – taking medications, following a diet and/or executing lifestyle changes – corresponds with agreed recommendations from a health care provider" (WHO, 2003). Adherence to ART has been shown to be among the major predictors of complete viral suppression, disease progression, and death (Bangsberg et al., 2001, Nachega et al., 2007). Factors that contribute to patients stopping their HIV medication include the side effects of the medication, the number of pills per day, disclosure of status, a perception of feeling well, fatigue, etc. (Juday et al., 2011, Mills et al., 2006a). A factor that has not been explored in depth is whether the employment status affects adherence (Falagas et al., 2008, Peltzer and Pengpid, 2013).

The overall objective of this project is to investigate whether employment status of people living with HIV is significantly associated with ART adherence (or HIV treatment adherence).

SPECIFIC AIMS AND RESEARCH HYPOTHESES

The specific aims of this study were:

- To assess the evidence on the relationship between employment status of a person living with HIV and their adherence to treatment;
- To assess the gender dimensions of the relationship between employment status and treatment adherence;
- To generate understanding on how employment contributes to treatment adherence (e.g., effect of employment on mental health, physical health, financial independence, etc.); and,
- To assess whether different types of employment or jobs have different impacts on treatment adherence.

We hypothesize that people living with HIV who are employed are likely to have excellent ART adherence (>95 per cent). The ultimate goal of this project is to strengthen the ILO's contribution to treatment programmes for people living with HIV with evidence-based recommendations. The study will also identify knowledge gaps for future research.

METHODOLOGY

SYSTEMATIC REVIEW APPROACH

This review was performed according to the PRISMA recommendations for meta-analyses (Moher et al., 2009).The review methods have been previously documented (Mills et al., 2006b, Nachega et al., 2012). The first step involves the global systematic literature review which is largely a review of documents. A sound literature review approach was used to critically analyze and summarize HIV treatment material (especially material on treatment adherence) from a wide range of sources including: reference books; books and eBooks; journals and newspaper articles; reports from the UNAIDS Secretariat and Cosponsoring Organizations; government publications; University papers; online electronic databases; project reports; internet sources and websites; references and bibliographies, scientific abstracts at conferences, PubMed, etc.

Selection criteria

We evaluated each identified study against the following predetermined selection criteria:

- Study population: people living with HIV;
- Study design: any study design, including cross-sectional, case-control or cohort studies; and,
- Outcomes: Adherence rates using both objective and self-reported measures.

Data abstraction

For each study identified that met the selection criteria, we extracted the following data from each publication: the first author's last name, the year of publication, the country where the study was performed, study design, year(s) of data collection, type of controls (population-based, hospital-based) in case–control studies, duration of follow-up in cohort studies, sample size, measure of exposure (indicators of occupation, employment), age, sex, the risk estimate with corresponding 95 per cent CIs, and variables controlled for. The information on the country where the study was performed was then classified both according to geographical area and country's income level (low-, middle- and high-income countries). We included studies that recruited participants 15 years of age and over. Employment was defined by the 13th International Conference of Labour Statisticians ICLS "Persons in employment are those above a specified age who during the reference week did any work for pay or profit, or were not working but had jobs from which they were temporarily absent (ILO, 2000)". The following definition of employment as defined by the ILO (ILO, 2000): "Persons in employment comprise all persons above a specified age who during a specified brief period, either one week or

one day, were in the following categories: paid employment and self-employment. Persons who during a specified brief period such as one week or one day, (a) performed some work for wage or salary in cash or in kind, (b) had a formal attachment to their job but were temporarily not at work during the reference period, (c) performed some work for profit or family gain in cash or in kind, (d) were with an enterprise such as a business, farm or service but who were temporarily not at work during the reference period for any specific reason" (ILO, 2000).

Study selection

Two of the reviewers evaluated the eligibility of studies obtained from the literature search. In cases of discrepancy the third co-author reviewed the studies until agreement was reached by consensus. One reviewer extracted data and others checked the extracted data.

Data synthesis

Meta-analyses were performed using a random-effects model of DerSimonian and Laird, which incorporates both within- and between-study variability, since between-study heterogeneity was anticipated. Heterogeneity was assessed amongst trials by inspecting the forest plots and using the chi-squared test for heterogeneity with a 10 per cent level of statistical significance, and using the I^2 statistic with a value of 50 per cent representing moderate heterogeneity. To evaluate the stability of the results and to test whether one study had an excessive influence on the meta-analysis, the leave-one-study-out sensitivity analysis was performed. The scope of this analysis was to evaluate the influence of individual studies, by estimating pooled estimate in the absence of each study.

Following the overall analyses, a number of subgroup analyses were performed with respect to publication year (1996 to 2004 versus 2005 to 2013), study design (cross-sectional versus prospective cohort), country's income group (low, middle and high), adherence thresholds, adherence measures, sample size, percentage male included in the study, unemployment rate (as defined by the authors of the study) and adherence rate.

Random-effect univariable meta-regression was performed to investigate the source of heterogeneity. The independent variable was the log odds ratio (for the association between employment status and optimal adherence rate) and explanatory factors included study-level covariates listed above. All tests were two tailed. For all tests, a probability level less than .05 was considered significant. Stata 12 (Stata Corporation, College Station, TX) software was used for statistical analyses. All statistical tests were two-sided.

KEY INFORMANTS INTERVIEWS

The second step involved the development of a data-gathering questionnaire and subsequent telephone interviews with identified stakeholders. Persons from an identified number of countries interviewed by phone included:

- Representatives of the Inter Agency Task Team on Treatment;
- Representatives from WHO;
- Representatives from networks of People living with HIV;
- Representatives from ILO constituents; and,
- Representatives from National AIDS Commissions (NACs).

Attention was paid to selecting a few key informants with considerable knowledge on the subject matter. All telephone interviews were arranged by ILOAIDS. ILOAIDS also identified countries in which key informants were recruited. The telephone interviews were conducted taking into consideration the gender dimensions of informants. The overall goal of the key informant interview was to collect data on the knowledge, perception and attitudes from carefully selected stakeholders. The specific aims were to:

- Assess the effect of employment status of people living with HIV on ART adherence;
- Investigate the gender dimensions of the relationship between employment status and ART adherence;
- Assess whether different types of employment differently affect HIV treatment adherence; and,
- Evaluate whether ART adherence positively or negatively affects acquisition or maintenance of employment.

Interviews were conducted in English by Dr Nachega and transcribed. The main interview questions can be found on the Appendix 2. Each interview session lasted approximately one hour. The transcripts were used for content analysis to identify main themes and were then coded for retrieval and qualitative analysis. Selected quotations were used to illustrate the themes.

RESULTS

SYSTEMATIC REVIEW AND META-ANALYSIS

A.1. Search results and study characteristics

The study selection flow diagram is shown in Figure 1. The literature search yielded 10,539 articles. After review, 164 articles were selected for critical reading. Twenty-three (Singh et al., 1996, Singh et al., 1999, Duong et al., 2001, Ickovics et al., 2002, Nachega et al., 2004, Beyene et al., 2009, Duggan et al., 2009, Nakimuli-Mpungu et al., 2009, Campos et al., 2010, Giday and Shiferaw, 2010, Kunutsor et al., 2010, Lal et al., 2010, Li et al., 2010, Peltzer et al., 2010, Sherr et al., 2010, Venkatesh et al., 2010, Harris et al., 2011, Juday et al., 2011, Kyser et al., 2011, Wakibi et al., 2011, King et al., 2012, Berhe et al., 2013, Vissman et al., 2013) studies met the inclusion criteria and were included in the systematic review.

Figure 1: Study selection flow diagram

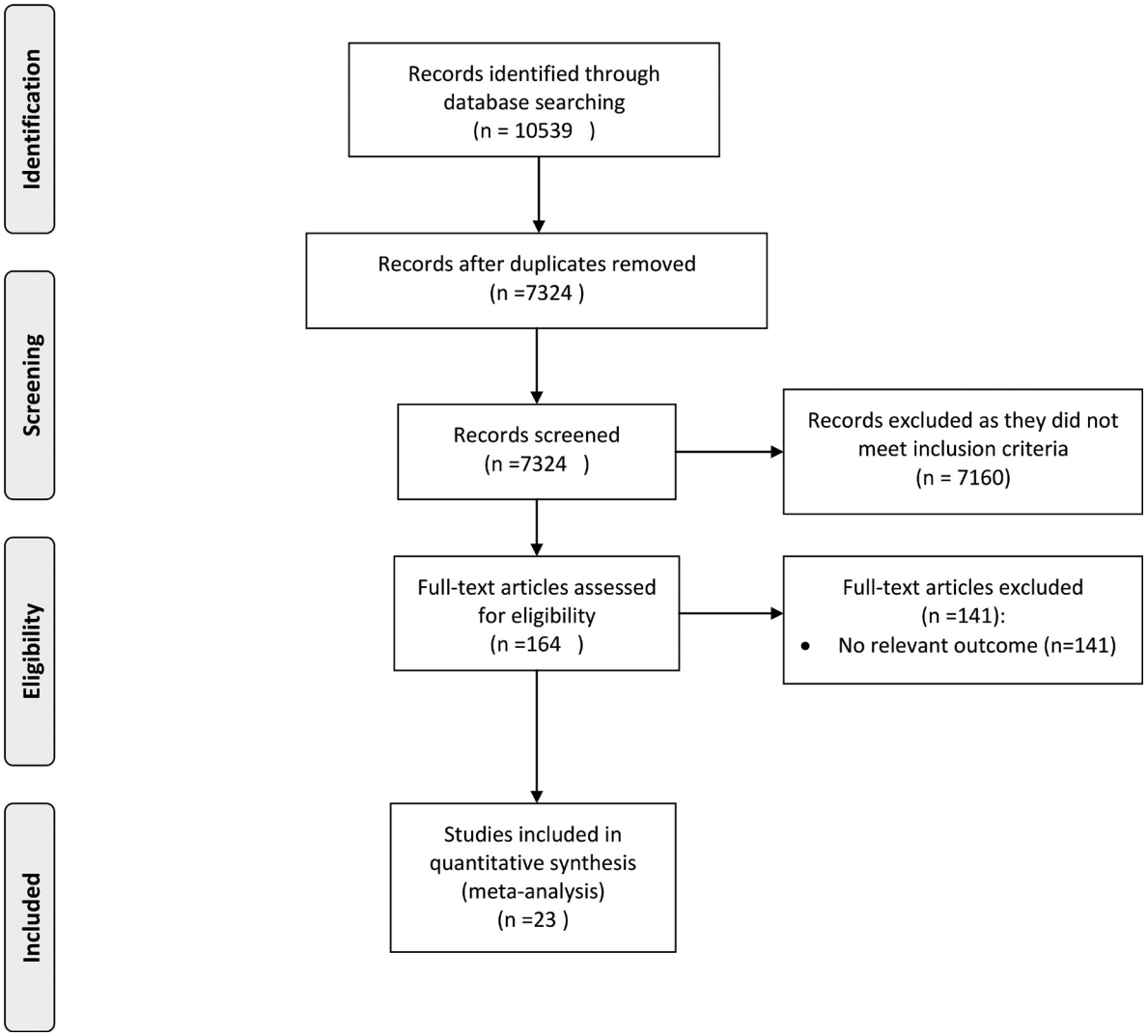


Table 1: Overall characteristics of included studies

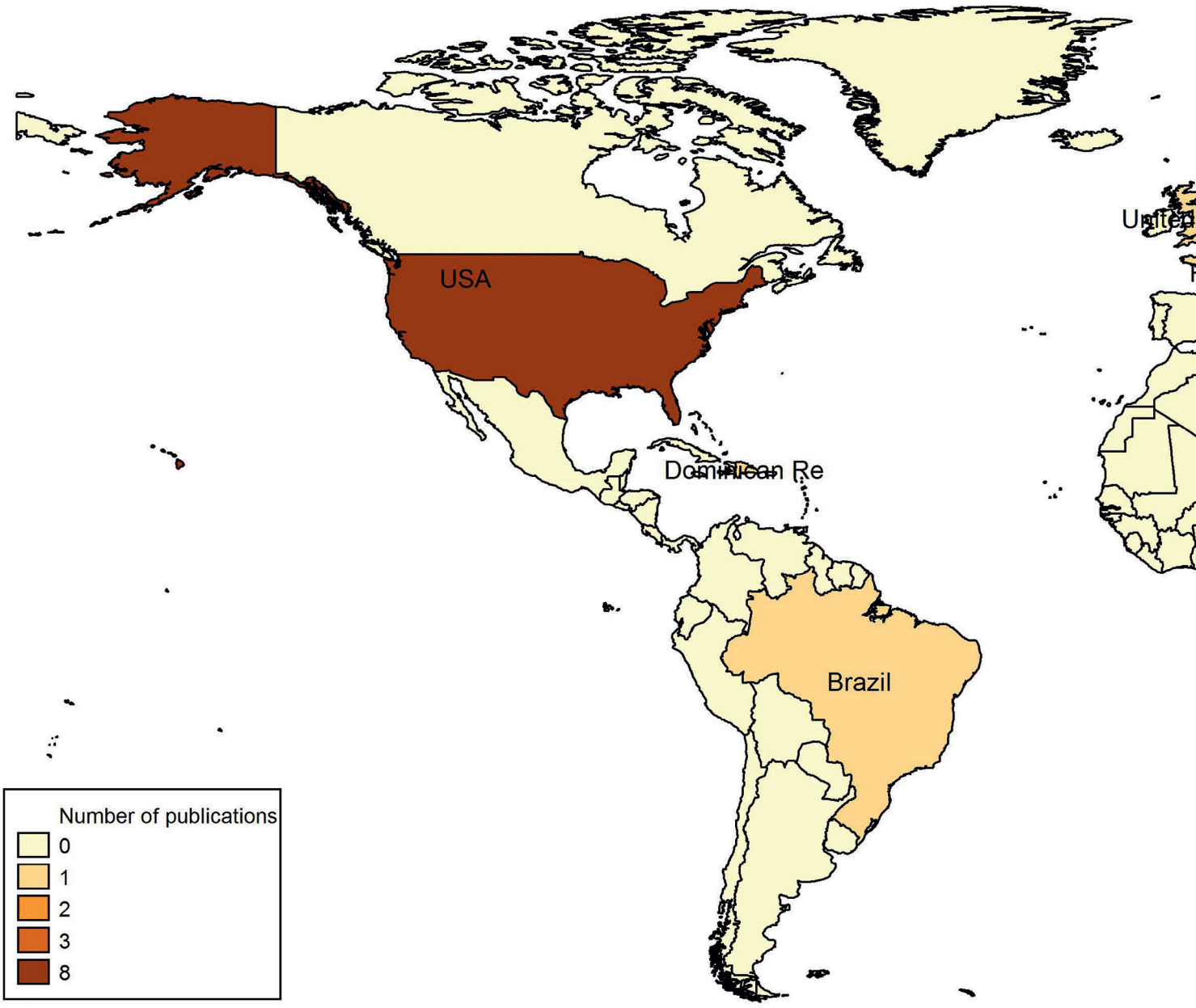
Author	Year of publication	Study period	Study design	Country	Country's income group
Singh	1996	Not reported	Prospective cohort	USA	High
Singh	1999	March 1996 to December 1997	Cross-sectional	USA	High
Doung	2001	Not reported	Cross-sectional	France	High
Ickovics	2002	Not reported	Cross-sectional from RCT	USA	High
Nachega	2004	Not reported	Cross-sectional	South Africa	Middle
Duggan	2009	August to November 2006	Cross-sectional	USA	High
Beyene	2009	August to October 2009	Cross-sectional	Ethiopia	Low
Nakimuli-Mpungu	2009	Not reported	Cross-sectional	Uganda	Low
Venkatesh	2010	Jan to April 2008	Cross-sectional	India	Middle
Li	2010	Not reported	Cross-sectional from RCT	Thailand	Middle
Peltzer	2010	October 2007 to February 2008	Cross-sectional	South Africa	Middle
Sherr	2010	2005 to 2006	Cross-sectional	UK	High
Kunutsor	2010	Not reported	Prospective cohort	Uganda	Low
Campos	2010	May 2001 to May 2002	Prospective cohort	Brazil	Middle
Lal	2010	2005	Cross-sectional	India	Middle
Giday	2010	August to September 2008	Cross-sectional	Ethiopia	Low
Wakibi	2011	November 2008 to April 2009	Cross-sectional	Kenya	Low
Juday	2011	April to May 2007	Cross-sectional	USA	High
Kyser	2011	March 2004 to June 2006	Prospective cohort	USA	High
Harris	2011	June 2004 to December 2005	Cross-sectional	Dominican Republic	Middle
King	2012	February 2007 to December 2009	Cross-sectional from RCT	USA	High
Vissman	2013	November 2008 to April 2009	Cross-sectional	USA	High
Berhe	2013	August 2012 to October 2012	Cross-sectional	Ethiopia	Low

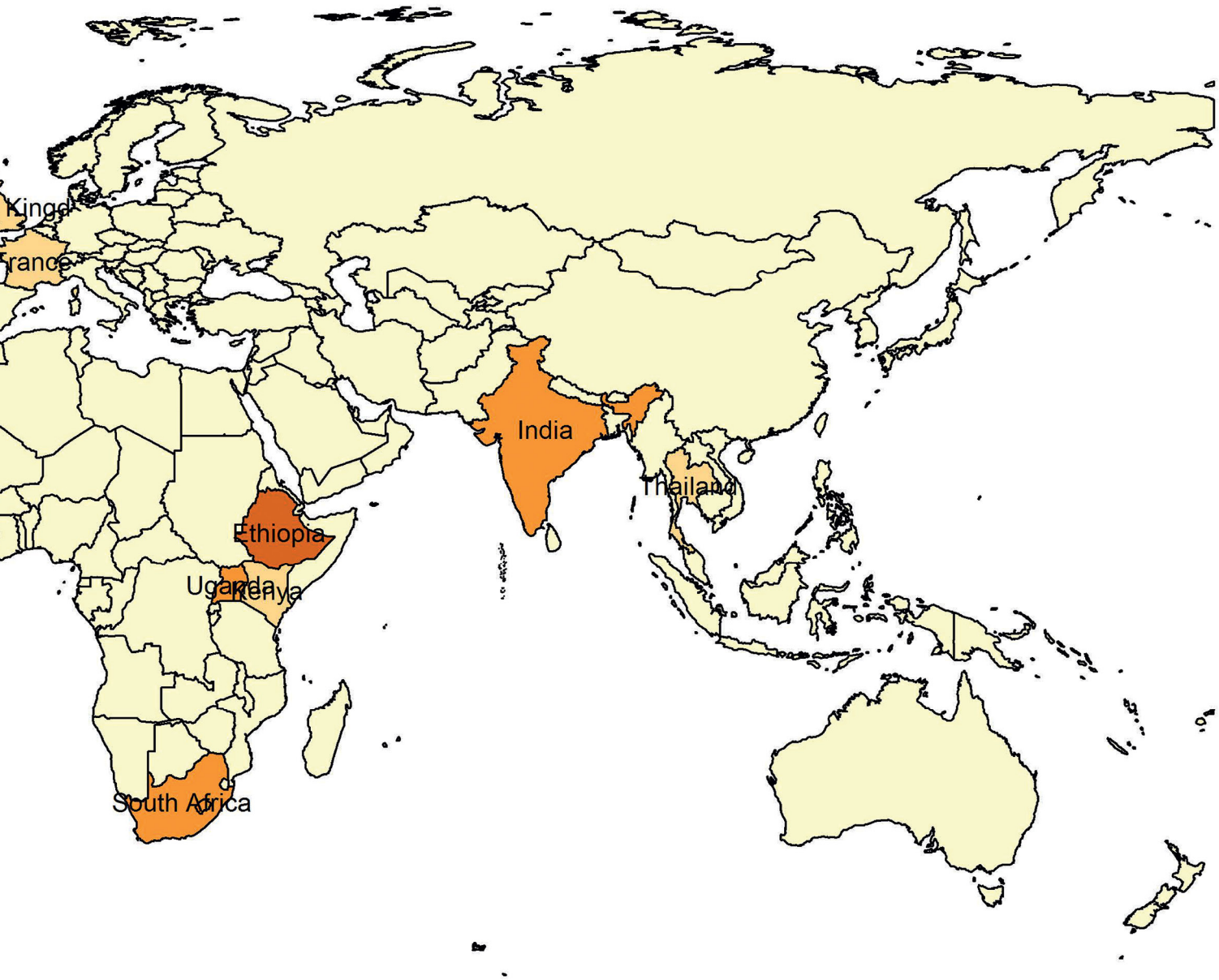
Table 1 presents the characteristics of the included studies. When reported the studies were carried out between 1996 and 2012 and published between 1996 and 2013. Most of the studies were cross-sectional (n=18, 78 per cent) and only five were prospective cohort studies (22 per cent). Most were carried out in the United States (n=8, 35 per cent) followed by Ethiopia (n=3, 13 per cent), India (n=2, 9 per cent), South Africa (n=2, 9 per cent) and Uganda (n=2, 9 per cent) (Figure 2). Except for one study that recruited treatment naïve participants, studies have recruited participants already on antiretroviral therapy (n=22, 96 per cent). Most (n=12, 60 per cent) of the studies defined adherence threshold at ≥95 per cent of the prescribed doses in a given period as stated by the authors.

Treatment population	Adherence threshold (%)	Adherence measure	Sample size	Percentage males	Age (years)	Unemployment rate	Adherence rate	Measure of association
Experienced	≥80	Pharm Refills	46	Not reported	23 to 68	41.0	63.0	Unadjusted
Experienced	-	Pharm Refills	123	Not reported	24 to 71	52.8	82.1	Unadjusted
Experienced	-	Blood conc.	149	71.8	21 to 79	45.6	89.0	Unadjusted
Experienced	≥95	Self-reported	93	88.0	19 to 61	23.9	63.0	Unadjusted
Experienced	≥95	Self-reported	66	28.8	36.1	40.9	88.0.	Unadjusted
Experienced	-	Combined	132	66.7	18+	55.3	74.2	Unadjusted
Experienced	≥95	Self-reported	422	43.6	32.2 (7.2)	59.0	93.1	Unadjusted
Experienced	≥90	Self-reported	122	21.3	36 (8.2)	34.4	82.8	Adjusted
Experienced	≥95	Self-reported	198	68.5		21.9	49.0	Unadjusted
Experienced	100	Self-reported	386	32.7	38 (6.4)	15.5	68.6	Unadjusted
Naive	≥95	Self-reported	735	29.8	18 to 67	59.6	82.9	Unadjusted
Experienced	100	Self-reported	449	78.9		42.8	42.8	Unadjusted
Experienced	≥95	Pharm Refills	392	35.2	32 to 45	55.4	93.1	Unadjusted
Experienced	≥95	Self-reported	293	65.9	18+	35.1	62.8	Unadjusted
Experienced	≥95	Self-reported	300	72.0	mean=36.8	31.9	75.7	Unadjusted
Experienced	≥95	Self-reported	510	38.6	15 to 63	39.6	88.2	Unadjusted
Experienced	≥95	Self-reported	403	35.0	18 to 64	34.0	82.0	Unadjusted
Experienced	100	Self-reported	461	76.1	44.4 (9.3)	56.2	54.0	Adjusted
Experienced	100	Self-reported	528	78.0	20 to 66	41.0	84.0	Unadjusted
Experienced	95	Self-reported	300	45.0		53.0	76.0	Unadjusted
Experienced	100	Self-reported	326	72.1	45.9 (7.6)	79.0	60.4	Unadjusted
Experienced	100	Self-reported	66	74.0	38 (10.3)	52.0	71.0	Unadjusted
Experienced	95	Self-reported	174	46.0	38.5 (8.4)	20.1	40.8	Unadjusted

Self-reported (n=18, 78 per cent) questionnaires were used by most of the studies followed by pharmacy refills (n=3, 13 per cent), blood concentration (n=1, 4 per cent) and combination of methods (n=1, 4 per cent). The median sample size was 300 and ranged from 45 to 735 participants. When reported the percentage of males included in the study ranged from just 21 per cent to as much as 88 per cent. The median percentage of unemployed participants was 41 per cent (range: 16 per cent to 79 per cent).

Figure 2: Included studies location

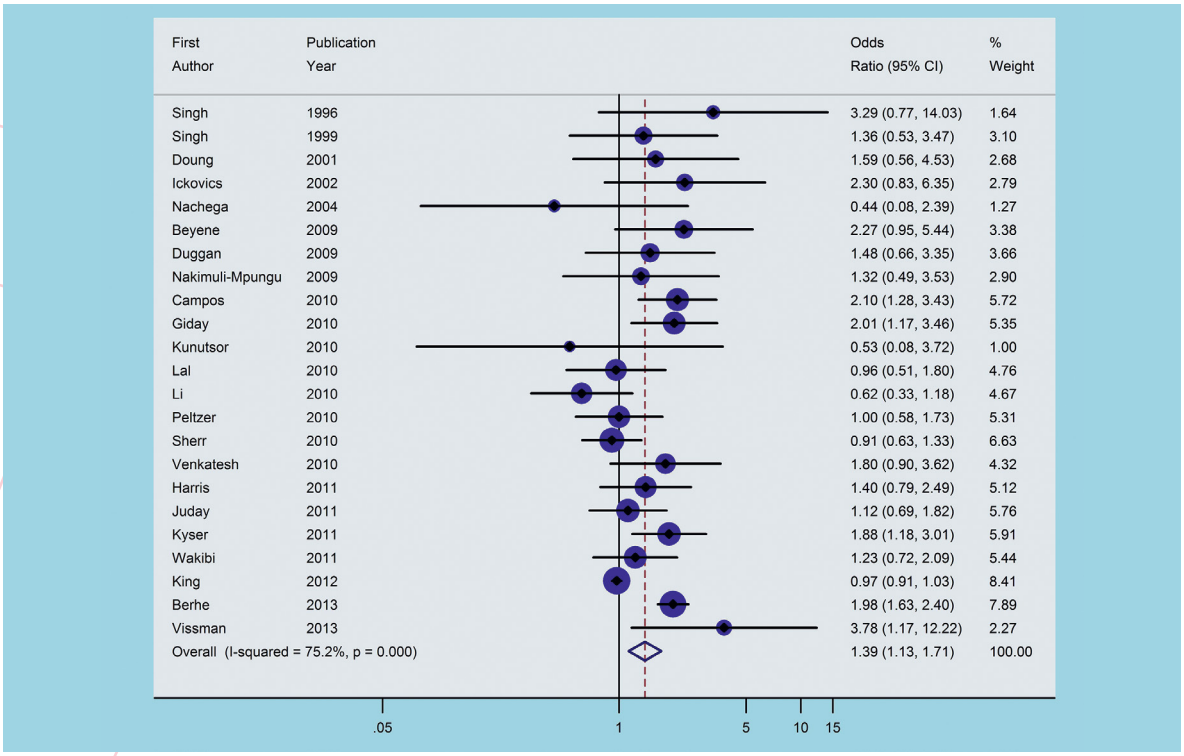



Kingd
France
India
Thailand
Ethiopia
Uganda
Kenya
South Africa

A.2. Overall association between adherence rate and employment status

The strength (odds ratio=OR) of the association between adherence rate and employment status and 95 per cent CIs from individual studies with a pooled estimate are shown in Figure 3. The random-effect meta-analysis yielded a pooled OR of 1.39 (95 per cent CI 1.13 to 1.71), such that those respondents who were currently employed at the time of the study were 39 per cent more likely to have achieved optimal antiretroviral adherence than those unemployed. There was evidence of substantial statistical heterogeneity between the study results with the degree of heterogeneity quantified by the I^2 as 75.2 per cent. The results of the leave-one-study-out sensitivity analyses showed that no study had undue influence on pooled estimate.

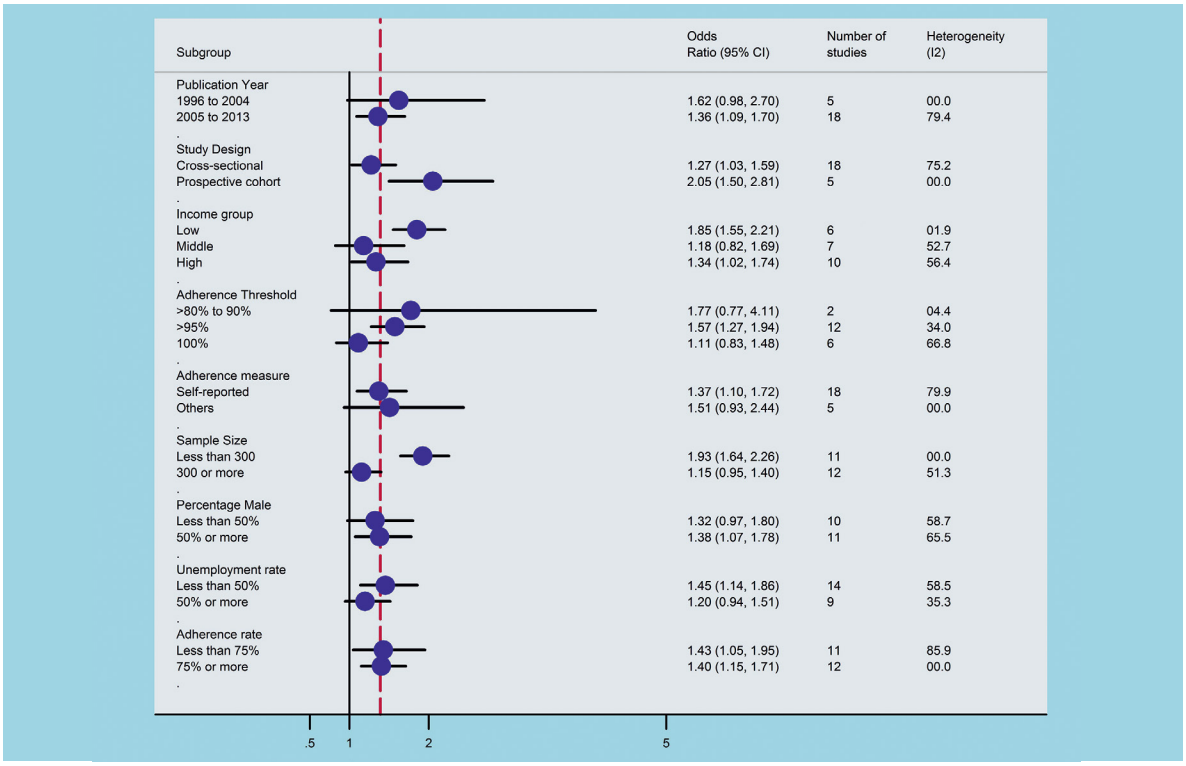
Figure 3: Odds ratio (OR) and 95 per cent confidence interval (CI) for association between employment status and adherence to antiretroviral therapy



A.3. Differential in associations by different subgroups

The results of subgroup analyses are shown in Figure 4. We found no evidence of statistically significant differentials in the association between employment status and optimal ART adherence by publication year, country's income group, adherence measures, percentage of males, unemployment rates and adherence rates. The strength of the association between employment status and optimal ART adherence was significantly higher in prospective cohort studies than cross-sectional studies (OR: 2.05 versus 1.27, p-value for interaction = 0.047). Similarly, the strength of the association was significantly higher in small studies (<300) than studies that recruited more than 300 participants (OR: 1.93 versus 1.15, p-value for interaction = 0.002).

Figure 4: Odds ratio (OR) and 95 per cent confidence interval (CI) for association between employment status and adherence to antiretroviral therapy by different subgroups



A.4. Factors modifying association estimates as identified by meta-regression analyses

Factors associated with association estimates and proportion of explaining variability are identified in Table 2. In the univariable meta-regression analyses, only study design and sample size were significant predictors of the association between employment status and optimal adherence estimates. However, differences in adherence thresholds may be a major source of heterogeneity. As shown in Table 2, adherence thresholds explained about 41 per cent in between study heterogeneity in between employment status and optimal adherence estimates, followed by study sample size (28 per cent) and study design (22 per cent).

Table 2: Results of meta-regression analyses

Factor	Ratio of odds ratio (95% CI)	P-value	Adjusted R-squared*
Early (1996-2004) versus later (2005 to 2013) study	0.84 (0.55 to 1.60)	0.578	0.0
Cross-sectional (vs. cohort) study	0.61 (0.37 to 0.99)	0.047	21.5
Country's income group			11.4
Low (versus middle) income	0.70 (0.43 to 1.15)	0.151	
Low (versus high) income	0.78 (0.50 to 1.24)	0.279	
Adherence threshold			40.7
≥80-90% (vs. ≥95%)	0.87 (0.30 to 2.50)	0.779	
≥80-90% (vs. ≥100%)	0.61 (0.21 to 1.79)	0.348	
Self-reported (vs. others)	0.90 (0.48 to 1.69)	0.738	0.0
Smaller (<300) versus larger (≥300) study	0.61 (0.45 to 0.82)	0.002	28.3
Percentage male (<50% vs. ≥50%)	1.03 (0.68 to 1.56)	0.869	0.0
Unemployment rate Percentage male (<50% vs. ≥50%)	0.86 (0.58 to 1.25)	0.405	8.5
Adherence rate Percentage male (<75% vs. ≥75%)	0.99 (0.67 to 1.46)	0.954	0.0

*proportion of between study heterogeneity explained

KEY INFORMANT INTERVIEWS

Information about epidemiology training models, current research and challenges was collected remotely from the ILO headquarters in Geneva through telephone interviews from a convenient sample from September 11 to 13 in 2013. A total of 15 key informant interviews were planned, 12 agreed and 3 declined (2 due to ongoing travels and 1 due last minute unavailability). The mean age of the key informants was 47.5 years, ranging from 34 to 62 years, and included six men, five women and one transgender.

B.1. Employment status of HIV-infected individuals and ART adherence

Overwhelmingly, all key informants reported that employment is likely to positively impact on ART adherence by providing food security and financial security to cope with structural barriers such as lack of transport, money to attend clinic visits and collect pharmacy refills and money to make out-of-pocket payments for any other health services at public health sites or in the workplace. On the other hand, being unemployed is likely to lead to depression and in turn to unhealthy behaviors (i.e. substance abuse, commercial sex), homelessness and imprisonment which has been shown to be a factor for non-adherence. In a setting where patients need to pay for ART out of their pocket, unemployment is definitely likely to lead to a period of treatment interruptions since patients may not be able to afford ART and as a consequence, the emergence of drug resistance and treatment failure. Unemployment can also lead to low self-care, low self-esteem and a feeling of hopelessness, a likely cause of poor mental health.

“Unemployment is likely to: lead to the use of other therapies (traditional, modern, religious, etc); mood disorder (anxiety, depression, work stress); and treatment disruption at the hospital...”

(Female key informant)

While in most of the developing countries, people living with HIV who are not employed do not have the financial security for their basic needs, this is not the case in developed countries such as the USA. As reported by one key informant, unemployed people living with HIV can access a government disability grant which allows them to cover housing, food and other basic living expenses. Consequently, the consequence of unemployment would have a less negative impact in high-income than in low- and middle-income countries. It was also noted that a government grant could lead to selected individuals not prioritizing the search for employment (which could, in part, be due to an ongoing depression).

“Unemployment through poor mental health can lead to a situation where patients are less structured and unable to develop a routine schedule for taking medications at a specified schedule, eating or sleeping...”

(Male key informant)

B.2. Stigma and discrimination

All key informants interviewed agreed that perceived HIV stigma will lead to non-disclosure of the patient's own HIV status and negatively impact on ART adherence in the workplace and that patients who are not open about their HIV status are likely to miss ART doses while trying to avoid being seen taking ART by their peers, colleagues or the employer.

"Stigma still exists in the workplace... but it mostly depends on the supportive attitude of the employer and staff about HIV..."

(Female key informant)

B.3. Gender differences to ART adherence and employment

Ten out of 12 respondents reported that when put in the same situation of employment (or unemployment), women are more likely to adhere to ART than men.

"This (women are more likely to adhere than men) could be explained by the fact that women might feel more the necessity of remaining alive and healthy because they have to take care of children and the family"

(Female key informant)

"Women have better supportive services from antenatal care, easier access and are more willing to adhere to protect their babies...HIV-infected males are more likely to be in denial, abuse alcohol, take drugs and be more reckless..."

(Male key informant)

Interestingly, the above views from key informants contrast with the views of other key informants who reported that employment status is likely to have more impact on males than females because men have better job opportunities and coping mechanisms which all in all, are likely to translate to better ART adherence.

B.4. ART regimen simplification toward single tablet regimen, adherence and employment status

The availability of ART regimen simplification with once-a-day ART regimen will likely impact positively on adherence since patients would need to take their ART medication only in the morning before going to work or once at night before going to bed. However, it was stressed by one key informant that single tablet ART regimens are less likely to make an important impact if other structural or individual barriers are not addressed. In other words, only a comprehensive approach to addressing patient challenges to adherence is likely to make a significant difference.

"...Reducing ART dosing frequency to one tablet once-a-day will certainly improve the adherence of the happy few privileged

workers who: a) Believe in modern medicine and are not in a multiple therapy treatment; b) Who have access to free, permanent treatment; c) Who can avoid long tedious and humiliating queues at the hospital..."

"*...For the vast majority of the other non adherent workers and unemployed patients, ART dosing frequency reduction will probably have very little improvement, unless the various factors of non adherence are taken into account (social, cultural, biological, psychological factors, etc.)...*"

(Female key informant)

B.5. Type of employment and impact on HIV treatment adherence

Eight out 12 key informants agreed that employment is likely to impact ART adherence with informal work be mostly affected by structural barriers for ART adherence and formal workplace being mostly impacted by issues related to stigma/fears of discrimination. The latter being a major concern mostly in jobs of position of power (e.g. CEOs, political jobs, etc.).

"*Workers working in the informal sector or in small or medium size companies with no insurance or health policy are more likely to adhere poorly to ART because the salary is not high enough or irregular.*"

"*...The higher the position the more discreet the workers are about their HIV status. The consequences of knowing that the Chairmen of the company or the Head of the Marketing Department is HIV positive can be by far more damaging for their career than knowing that a cashier is HIV positive...*"

(Female key informant)

B.6. Impact of ART adherence in acquiring and/or maintaining employment

While the majority (11 out of 12) of the respondents agreed that ART adherent patients are likely to acquire and maintain employment since they are less likely to experience opportunistic infections, hospitalizations, etc., it was also noted that sometimes HIV patients who experience health challenges may have a more competitive mindset to compete for a job than apparently "healthy" people living with HIV.

"*Highly adherent patients can remain healthy for a longer period, their HIV status can remain unknown or even denied for a longer period.*"

(Female key informant)

DISCUSSIONS

MAIN FINDINGS

A - Impact of employment on ART adherence

A goal of systematic reviews and meta-analyses is to provide the clinician or researcher with a balanced appraisal of the totality of the evidence in an area, ideally by reading one review, as opposed to a multitude of individual studies. This allows for a more objective appraisal of the evidence, which may lead to resolution of uncertainty and disagreement. This systematic review has brought together evidence from 23 studies from the last 17 years incorporating 6,674 participants living with HIV. We found that respondents who were currently employed at the time of the study were 39 per cent (could increase between 13 per cent and 71 per cent) more likely to have achieved optimal antiretroviral adherence than those unemployed. Our findings are in line with the findings from a prior meta-analyses of the barriers to ART adherence by our collaborative research group which found that among others, the main reported barriers for ART adherence in both developed and developing countries included statements such as "financial constraints" which is a proxy for unemployment (Mills et al., 2006a).

There may be several possible explanations for the observed association. For example it is possible that unemployed people living with HIV are more prone to depression (Murphy and Athanasou, 1999); and depression has been found to be associated with poor ART adherence (Gonzalez et al., 2011). Murphy reviewed 16 longitudinal studies that examined whether job loss negatively impacts the mental health of the unemployed and found that there is evidence that unemployment has negative effects on mental health (Murphy and Athanasou, 1999). Gonzalez and colleagues pooled data from 95 published reports that examined the association between depression and non-adherence of ART and reported statistically significant associations that is stable across the population and not short lived (Gonzalez et al., 2011).

Also, in a cross-sectional survey from Vietnam which included 1,016 HIV/AIDS patients at seven hospitals and health centres providing antiretroviral treatment services in three provinces (Hanoi, Hai Phong, and Ho Chi Minh City) 25.9 per cent had a suboptimal rate of self-reported (visual analogue scale or VAS) adherence. In a multivariate analysis, increased perceived self-efficacy, use of mobile phone alarms, and reminders from family members were associated with optimal adherence; while higher CD4 level, single status, and unstable employment were associated with suboptimal adherence (Tran et al., 2013). Similarly, in a qualitative study in Vietnam it was reported that most participants brought up fears that taking their medication would reveal their

HIV status to family members, friends, neighbors, or co-workers and this was stated as a main barrier to ART adherence (Van Tam et al., 2011).

B - ART adherence and employment status in low-, middle- and high-income countries

In our meta-analyses, we found no evidence of statistically significant differentials in the association between employment status and optimal ART adherence by a country's income as defined according to the definition of low-, middle- and high-income countries. But the results of our qualitative study were more informative. It was reported that in most developing countries, people living with HIV who are not employed and lack the financial security for their basic needs. This was not accepted by a key informant from the United States who reported that unemployed people living with HIV could access a government disability grant that allows them to cover housing, food and other basic living expenses. Therefore, one could expect that the impact of unemployment would be less negative in high-income countries than in low- and middle-income countries.

C - ART initiation/adherence and capacity to acquire and/or maintain employment

Interestingly, Rosen and colleagues (Rosen et al., 2008) found that pre-ART workers were almost twice as likely to report being unable to work in the previous five-day work week than those who had recently begun ART. Furthermore, those on ART for three to six months were absent on average three fewer days per month than those on ART for less than three months. A recent narrative review of the economic outcomes of AIDS treatment reinforces these findings: work absenteeism decreased significantly over a worker's first year on treatment and that ART use improved productivity (Beard et al., 2009).

In a qualitative study, Scott and colleagues sought to elicit descriptions of how employment helps or hinders adherence, and how workplaces provide support or present challenges. The respondents came from three workplaces in Zimbabwe: a forestry estate with approximately 800 employees, the local department of a national tea estate with 85 employees in Manicaland and a gold mine with a total of 500 employees. Most workers on ART also want to continue in their original positions for as long as possible but may need some accommodation, such as longer breaks or modified duties. Continuing to work in approximately the same capacity is economically important and also affirms their personal and social identity as "normal" and productive people (Scott et al., 2012).

Our study did not find evidence of statistically significant differentials in the association between employment status and optimal ART adherence by publication year. Also, we did not find evidence of statistically significant differentials in the association between employment status and optimal ART adherence by the country's income group. However, key informant interviews and published qualitative data highlight specific country- or settings-related differences and/or experiences when it comes to HIV treatment, adherence and employment. As an example, a qualitative study in Uganda using semi-structured interviews with 24 adult ART clients attending urban and rural HIV clinics, explored changes in physical

health, work activity and asset management from before acquiring HIV to after ART. Eighty-eight per cent of participants were working prior to acquiring HIV (mostly microenterprises and subsistence farming), of whom 18 had to stop work at least temporarily after onset of HIV. After ART, 20 (83 per cent of the sample) were engaged in some type of work, but for many it was not at the same level as before acquiring HIV. Also, most who previously had salaried employment were unable to return to the formal labor market. Two thirds of the sample reported having to sell off at least some of their land, capital, or household property after HIV, and few were able to buy it back after ART. A majority (67 per cent) reported that economic support from family was instrumental after the onset of HIV, and for 38 per cent this support continued to be necessary after ART. These findings highlight that while ART helps people to regain a capacity to work, other economic supports are needed to enable individuals and households to reestablish their livelihoods, especially in resource-constrained settings (Wagner et al., 2009).

D - Adherence/retention in workplace versus public sector ART programme

Dahad and colleagues investigated reasons for discontinuation of ART in workplaces and public-sector HIV programmes in South Africa. They found that the main reasons for attrition in the workplace where uncertainty about their own HIV status and about the value of ART, poor patient-provider relationships and workplace discrimination. In the public sector, these were moving away and having no money for clinic transport (Dahab et al., 2011). Furthermore workplace participants were not only poorly convinced of the need for treatment, but also felt that the follow-up visits required by the ART clinic created problems for them with their employers. The most frequently cited reason for treatment discontinuation among the workplace programme participants was harassment and discrimination by line managers who refused to grant time off work for clinic attendance. Managers in the workplace reportedly queried the need for clinic attendance if the employee ''look[ed] fine'' and considered repeated absences for clinical follow-up as a way of ''abusing sick leave''. In such circumstances, participants often decided to stop attending the clinic rather than disclose their status and risk further confrontations, or at worst termination of employment: "I had to choose between losing my job and coming here [clinic] . . . if your senior wants to know the reason why you go to hospital every month how am I going to tell him the truth? We fought with words . . . he told me that I am abusing sick leave because I look fine to him . . . I tried to come forcefully, believe me, that is when he told me that he will recommend medical board and he started treating me differently" (Dahab et al., 2011).

E - ART adherence, employment and gender

We found no evidence of statistically significant differentials in the association between employment status and optimal ART adherence by the percentage of males' adherence rates. There are likely to be multiple factors at play that could balance each other to account for our findings. First of all, there is a gender gap in access to ART. In most regions of the world, and especially in settings with a high burden of HIV infection, women are more likely than men to be accessing ART (Puskas et al., 2011) as well as supportive HIV services such as targeted counseling, etc. For all

these reasons, women from such settings are likely to be more adherent and retained in care than men, which was also confirmed by the majority of our key informants from Africa. On the other hand, access to employment may be higher for men than for women so that employment could be a function of increased adherence among men as they will likely experience better financial security, food security or access to ART services at the workplace than their female counterparts. At the same time, as reported by several of our key informants, men may be more prone to substance misuse (alcohol, etc.) than women and substance abuse may be higher among the unemployed than the employed (Dooley et al., 1996) and women may be more prone to depression than men (Parker and Brotchie, 2010). Therefore it is clear that there are many factors at play here to remind us that the reality is more complex and differs from setting, cultural and economic conditions.

F - ART regimen simplification toward once-daily regimen and low pill burden and impact on ART adherence and employment

This review was not able to analyses studies using fixed-dose combinations adherence in relation to employment status. Fixed-dose combinations are a significant advance in antiretroviral treatment simplification, contributing to an increase in compliance with complex chronic therapies and thus improving the patients' quality of life. Reducing the number of pills and daily doses are associated with higher adherence and better quality of life (Aldir et al., 2013, Kauf et al., 2012, Nachega et al., 2011, Parienti et al., 2009).

However, from key informant interviews it was stressed that social, structural and behavioural barriers would remain, even with fixed-dose combination therapy. This is confirmed in a qualitative study in Uganda with patients purchasing fixed-dose, low-cost, generic ART suggesting that missed doses may be more due to a failure to access medication rather than a failure to adhere to medications, and that structural rather than behavioral interventions may be most useful to insure optimal treatment response (Crane et al., 2006).

It is expected that the current increased availability of single tablet ART, not only in high income countries (EACS, 2012, Panel on Antiretroviral Guidelines for Adults and Adolescents, 2013, Thompson et al., 2012), but as well as strongly recommended by WHO in middle- and low-income countries as a fixed-dose combination regimen will likely have a positive impact on adherence since patients would need to take their ART medication only in the morning before going to work or once at night before going to bed. Such simplified ART regimens will also prevent patients being seen taking ART at the workplace or during the day while on business trips and hence minimize fear of stigma/discrimination related to HIV status. Therefore, there is a need to formally conduct research on ART regimen simplification to allow collection of both qualitative and quantitative data to investigate and confirm the impact on adherence, patient satisfaction, quality of life, cost-benefit, cost-effectiveness of once-daily ART regimen, low pill burden and impact on ART adherence and employment.

G - Formal and informal working and impact on ART adherence

Not surprisingly, selected key informants reported that fear of stigmatization and subsequently ART non-adherence is likely to be at its maximum for HIV patients working in a formal work environment as compared to the informal work setting where patients may have more flexibility in hiding or arranging to take their drugs in privacy. However, patients working in an informal job setting are more likely to experience structural barriers to ART adherence.

Some of the problems with structural barriers of ART (adherence) in the formal employment sector have also been reported in companies in South Africa. "In a few cases, stigma and discrimination are preventing people living with HIV from coming forward to receive antiretroviral therapy. A major issue is whether to provide antiretroviral therapy to employees only, or also to their partners and families. Another issue that needs to be addressed is how to sustain antiretroviral therapy when an employee is made redundant or chooses to leave the company's employment."

H - Productivity gain related to ART treatment and adherence

Using 2009 ART prices and programme costs, Stover and colleagues estimated that the discounted resource needs required for maintaining this cohort are $14.2 billion for the period 2011-2020 (Stover et al., 2011). This investment is expected to save 18.5 million life-years and return $12 billion to $34 billion through increased labor productivity, averted orphan care, and deferred medical treatment for opportunistic infections and end-of-life care. Under alternative assumptions regarding the labor productivity effects of HIV infection, AIDS disease, and ART, the monetary benefits ranged from 81 per cent to 287 per cent of programme costs over the same period. They concluded that in addition to the large health gains generated, the economic benefits of treatment will substantially offset, and likely exceed, programme costs within 10 years of investment (Stover et al., 2011). Indeed, patients who are working are more likely to remain employed because of treatment with HAART. HAART prescribed to patients in less advanced stages of the infection may lead to the greatest gain in employment (Goldman and Bao, 2004).

STUDY STRENGTHS AND LIMITATIONS

The results of this meta-analysis should be interpreted with caution. The observational nature of the data limits the ability to draw causal inferences. We found statistically significant heterogeneity across the studies, thus suggesting that the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) is important. A considerable proportion of the observed heterogeneity could be explained by differences in adherence thresholds, study sample sizes and study designs. However, even in the presence of high heterogeneity, meta-analysis has been suggested as a preferred option to qualitative or narrative interpretation of the results, because narrative synthesis can lead to misleading or wrong conclusions. Quantitative accuracy is an important feature of meta-analysis, and is one of the reasons for avoiding narrative interpretation without synthesis. Heterogeneity appeared to be the norm rather than the exception in published ART adherence meta-analyses. None of the included studies compared treatment adherence across occupation type. Despite these limitations, the study strengths are important. We conducted comprehensive searches of databases to ensure that all relevant published information was identified. In addition, we also conducted a meta-regression analysis to investigate whether any particular study-level factor explained the results and could account for the observed variations between studies.

Finally, we supplemented this meta-analysis with a qualitative study which involved gathering the views of opinion leaders across the world about the impact of employment status on antiretroviral therapy adherence. The data collected were rich and was an added-value to the content and interpretation of the quantitative data.

IMPLICATIONS FOR FUTURE RESEARCH

The present review is unable to address all questions pertinent to the association between employment status and optimal adherence (Anema et al., 2009). Thus, there is a need for:

1) Further empirical studies to better identify how employment contributes to treatment adherence (e.g. effect of employment on mental health, physical health, financial independence, etc.);

2) Assessment whether different types of employment or jobs have different impacts of treatment adherence;

3) Longitudinal studies of how employment creation programmes can positively impact HIV treatment adherence, disease progression and quality of life;

4) Assessment of the impact of ART regimen simplification, impact satisfaction, quality of life and fear of HIV-related stigma and discrimination at the workplace; and,

5) Cost-benefit and cost-effectiveness studies to evaluate the above interventions.

CONCLUSIONS

This systematic review has brought together evidence from 23 studies from the last 17 years incorporating 6,674 participants living with HIV from low- middle-, and high-income countries. We found that respondents who were currently employed at the time of the study were 39 per cent (could increase between 13 per cent and 71 per cent) more likely to have achieved optimal antiretroviral therapy adherence than those who were unemployed. Overwhelmingly, all key informants reported that employment is likely to positively impact on ART adherence by providing food security, financial security to cope with structural barriers such as lack of transport, money to cover clinic visits and collect pharmacy refills, and access to ART and related support services at selected work places. We found that in most of the developing countries, people living with HIV and who are not employed do not have the financial security for their basic needs. All key informants interviewed agreed that perceived HIV stigma will lead to non-disclosure of the patient's own HIV status and negatively impact on ART adherence in the workplace and that patients who are not open about their HIV status are more likely to miss ART doses while trying to avoid being seen taking ART by their peers or the employer. Women are more likely to adhere to ART than men. Employment is more likely to impact ART adherence, with informal work mostly affected by structural barriers for ART adherence and formal work places mostly impacted by issues related to stigma/fears of discrimination. It was noted that sometimes HIV patients who experience health challenges may have a more competitive mindset to compete for a job than apparently "healthy" people living with HIV.

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APPENDICIES

APPENDIX 1 – SEARCH STRATEGY

#	Searches
1	hiv infections/
2	HIV.ti.
3	human immunodeficiency virus.ti,ab.
4	HIV Infections/pc
5	HIV/ or HIV-1/
6	Acquired Immunodeficiency Syndrome/pc [Prevention & Control]
7	exp hiv/
8	exp hiv-1/
9	exp hiv-2/
10	Human immunodeficiency virus.mp.
11	hiv.mp.
12	or/1-11
13	blue collar.mp.
14	blue collar.ti,ab.
15	white collar.mp.
16	exp Social Class/
17	exp Adult/ or Occupations/
18	Agriculture/ec, ed, ma [Economics, Education, Manpower]
19	exp Employment/
20	job.mp.
21	exp work/
22	exp income/
23	manpower.mp.
24	socioeconomic.mp.
25	socio-economic.mp.
26	office.mp.
27	or/13-26
28	exp Medication Adherence/
29	Adherence.mp.
30	Nonadherence.mp.
31	Compliance.mp.
32	or/28-31
33	12 and 27 and 32

APPENDIX 2 – KEY INFORMANT INTERVIEW QUESTIONNAIRE

UNIVERSITEIT·STELLENBOSCH·UNIVERSITY
jou kennisvennoot • your knowledge partner

HSRC Human Sciences Research Council

S. A. H. A. R. A
Social Aspects of HIV/AIDS Research Alliance

International Labour Organization (ILO): HIV TREATMENT ADHERENCE AND EMPLOYMENT STATUS

Multi-country research

In-depth Interview Questionnaire with Selected Key Informants (Version April 29, 2013)

This survey is conducted at XXXXX to provide us with information. We would like to learn about your knowledge, perception and attitudes about employment status and ART adherence to assist ILO to design targeted future intervention strategies. This in an anonymous survey and it is not required for your name to be recorded on this questionnaire. Your participation is voluntary and it should take only 30 to 40 minutes of your time.

SECTION 0: INTERVIEW DETAILS

a. Interview Date: DD/MM/YYYY _ _ / _ _ / _ _ _ _

b. Name of Country: .....

c. Name of Country Researcher: .....

d. Interview: Accepted [yes] Refusal [ ]

e. Reason(s): .....

SECTION 1: INTERVIEWEE DETAILS

I would like to start by asking you some background questions before we go further with the interview.	
1. How old are you?	..... (Age in years)
2. Gender	1 Male 2 Female
3. Highest level of education completed	1 Less than Primary 2 Primary school 3 Secondary / High school
4. Organization Name	.....M.O.M SUNSHINE.....
5. Level in the Organisation	Junior Management Middle Management
6. Years of service	
7. What is your role (if any) with regards to HIV/AIDS Programmes?	

SECTION 2: MCQs

In the following section we are asking multiple choice questions (MCQs) about HIV treatment adherence and employment status. Our specific aims are:

- To assess the impact of employment status of HIV-infected individuals and ART adherence
- To investigate gender dimension of the relationship between employment status and ART adherence
- To assess whether different type of employment impact differently on HIV treatment adherence
- To evaluate whether ART adherence affect positively or negatively acquisition or maintenance of an employment

Please respond by "Yes" or "No" and when necessary do not hesitate to provide a brief explanation to clarify your answer further.

7. Do you ever experienced situations where unemployed HIV-infected patients more likely to adhere poorly to ART?

0	Yes	
1	No	
2	Don't Know	

8. If answer is "Yes" to question 16. What are the possible reasons experienced by unemployed HIV patients?

0	Lack of food	
1	Lack of transport money to refill ART at the clinic	
2	Away of home, busy looking for job	
3	Broken (not able to afford ART)	
	Other (specify)	

9. Reported Causes of Delay in Returning to ART Clinic Visit or being lost-to-follow up (check):

0		Never	
1		Fear of what would be found on diagnosis	
2		Fear of social isolation	
3		Lack of transport money	
4		Inadequate staff attitude	
5		Long waiting time and fear of losing his/her current job	
6		Other (mention)	

10. Stigma

	Strongly agree=0	Agree=1	Average=2	Do not agree=3	Do not agree at all=4	
1. Do patients on ART ever reported being ashamed for not having a job?						
2. Do they have to hide from the other people at work when it is time to ingest their ART?						
3. Does being on ART and unemployment affect relation with the others?						
7. Does HIV and unemployment affect marital relation?						
8. Does HIV and unemployment affect family responsibilities?						
9. Does HIV status disclosure at workplace likely to impact positively ART adherence?						

11. Would male unemployed (vs. employed) HIV individuals less likely to adhere to HIV treatment as compare to their female counterparts?
To receive social support from the family

0	Yes	
1	No	
2	Don't Know	

12. If yes to Question 11: please explain

13. Does different type of employment impact differently ART adherence?

0	Yes	
1	No	
2	Don't Know	

14. If yes to Question 13: please explain

15. Does highly adherent patients more likely to report being employed?

0	Yes	
1	No	
2	Don't Know	

16. **If yes to Question 15: please explain**

17. **Does ART dosing frequency (e.g. single tablet regimen) likely to make much difference for the HIV employed vs. unemployed patients?**

0	Yes	
1	No	
2	Don't Know	

18. **If yes to Question 26: please explain**

Accessibility to the public health facility providing treatment

19. **Does ART pill burden (number of tablet) likely to make much difference for the HIV employed vs. unemployed patients?**

0	Yes	
1	No	
2	Don't Know	

20. **If yes to Question 28: please explain**

SECTION 3: OPEN-ENDED QUESTIONS

21. How can employment status of HIV-infected individuals affect ART adherence?

22. Do you think there are gender differences between employment status and ART adherence?

23. Do you think different types of employment can impact differently on HIV treatment adherence?

- **informal sector and small or medium size companies**

Workers working in the informal sector or in small or medium size companies with no insurance or health policy are more likely to adhere poorly to ART because the salary is not high enough or regular.

24. How can ART adherence affect the acquisition or maintenance of an employment?

25. Any other comments?

THANK YOU!

UNDER EMBARGO UNTIL 22:01 GMT ON WEDNESDAY 27 NOVEMBER 2013.

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