Impact of community-based support services on antiretroviral treatment programme delivery and outcomes in resource-limited countries: a synthetic review

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Abstract

Background: Task-shifting to lay community health providers is increasingly suggested as a potential strategy to overcome the barriers to sustainable antiretroviral treatment (ART) scale-up in high-HIV-prevalence, resource-limited settings. The dearth of systematic scientific evidence on the contributory role and function of these forms of community mobilisation has rendered a formal evaluation of the published results of existing community support programmes a research priority.

Methods: We reviewed the relevant published work for the period from November 2003 to December 2011 in accordance with the guidelines for a synthetic review. ISI Web of Knowledge, Science Direct, BioMed Central, OVID Medline, PubMed, Social Services Abstracts, and Sociological Abstracts and a number of relevant websites were searched.

Results: The reviewed literature reported an unambiguous positive impact of community support on a wide range of aspects, including access, coverage, adherence, virological and immunological outcomes, patient retention and survival. Looking at the mechanisms through which community support can impact ART programmes, the review indicates that community support initiatives are a promising strategy to address five often cited challenges to ART scale-up, namely (1) the lack of integration of ART services into the general health system; (2) the growing need for comprehensive care, (3) patient empowerment, (4) and defaulter tracing; and (5) the crippling shortage in human resources for health. The literature indicates that by linking HIV/AIDS-care to other primary health care programmes, by providing psychosocial care in addition to the technical-medical care from nurses and doctors, by empowering patients towards self-management and by tracing defaulters, well-organised community support initiatives are a vital part of any sustainable public-sector ART programme.

Conclusions: The review demonstrates that community support initiatives are a potentially effective strategy to address the growing shortage of health workers, and to broaden care to accommodate the needs associated with chronic HIV/AIDS. The existing evidence suggests that community support programmes, although not necessarily cheap or easy, remain a good investment to improve coverage of communities with much needed health services, such as ART. For this reason, health policy makers, managers, and providers must acknowledge and strengthen the role of community support in the fight against HIV/AIDS.

Keywords: HIV/AIDS, Antiretroviral treatment, Community support, Lay health workers, Resource-limited countries

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Background

Sub-Saharan Africa remains the region most heavily affected by HIV, and accounted for 68% of all people living with the virus and for 72% of AIDS deaths in 2009 [1]. Over the past decade, important strides towards the long-term management of the HIV/AIDS epidemic in sub-Saharan Africa have been made. Currently, an estimated 3.9 million people living with HIV/AIDS (PLWHA) have started antiretroviral treatment (ART) in the region [1]. The short-term results of these ART programmes are promising. A recent review by Barth and colleagues [2] has demonstrated that the proportions of patients with on-treatment success after 2 years of first-line therapy are comparable to those from developed countries.

However, these preliminary outcomes do not warrant complacency. First, the total number of people accessing ART in sub-Saharan Africa masks wide variation in the progress made towards universal access in these countries, with Botswana and Namibia leading the path by reportedly having in excess of 85% of those in need of ART, while Mozambique, Zimbabwe, and South Africa close up the ranks with only 51–56% of those in need of access to treatment [1,3-6]. Second, a recent review by Rosen and colleagues [7] has indicated that African HIV/AIDS treatment programmes have retained only about 60% of their patients in care at the end of 2 years of treatment. However, long-term retention of patients in treatment programmes is a prerequisite for achieving any adherence at all and thus conditional to durable ART success.

Scaling up ART to achieve universal coverage and simultaneously retaining these patients in care requires strengthening or even transformation of sub-Saharan African health systems and their ART programmes. Currently, a number of programme characteristics and health system constraints severely hamper successful and sustainable treatment scale-up in the region. Five inter-related challenges are increasingly cited in health policy literature [8-11]: (1) lack of integration of ART services into the general health system; (2) the growing need for comprehensive care to address the psychosocial and economic dynamics of HIV/AIDS; (3) the need to empower patients on ART towards self-management; (4) the importance of defaulting tracing to improve retention in care; and (5) the crippling shortage in human resources for health.

The heavy HIV/AIDS burden, together with the urgency to increase patient numbers, has resulted in a strong vertical approach to programme implementation [12]. Ample research has shown that, in most countries, there has been hitherto only minimal integration of ART services into other district-based primary health care (PHC) services (e.g. TB care) [10,13-15]. This approach might divert scarce resources away from other vital PHC services, and subsequently create the risk of ART facilities becoming “islands of excellence in seas of under provision” [16].

ART has transformed HIV/AIDS into a manageable – though still incurable – chronic illness, which renders chronic disease care a necessity for any ART programme to be a durable and sustainable success [17,18]. In addition to the medical effects of the epidemic, it also has clear socioeconomic and psychological dimensions, therefore, any successful solution to the epidemic needs to address this multidimensionality accordingly. Consequently, the implementation of the ART programme should not only be well integrated into the PHC system, it should also be comprehensive in addressing the social, psychological and economic dimensions of HIV/AIDS care (e.g. social support, socioeconomic status, education), to break the cruel cycle of social and economic poverty, high-risk sexual behaviour, and further transmission of HIV/AIDS [19-21].

Closely related to the above, recent studies have indicated that, especially in resource-limited settings, PLWHA on ART should be empowered towards self-management of their chronic illness [22,23]. In practice, this patient empowerment entails a wide range of educating and counselling activities that are aimed at increasing HIV/AIDS and ART literacy and chronic disease management skills. However, recent studies have suggested that overburdened health staff often have difficulty in conveying the practical skills required for practicing a more patient-centred and less technical model of patient care that is aimed at empowering PLWHA for informed day-to-day decision making [22].

When comprehensive care and patient self-management fail, patients discontinue treatment and develop rapid viral rebound and loss of CD4 T lymphocytes [24], which significantly increases the risk of drug resistance and treatment failure. In addition, patients with clinical AIDS who discontinue ART will probably die within a relatively short time [24]. In sub-Saharan Africa, however, resources are scarce and the health systems overburdened, which leaves little time and resources to trace defaulting patients.

Against the daunting challenge to move simultaneously beyond a single-purpose, vertical programme towards an integrated PHC approach, provide comprehensive HIV/AIDS care, empower patients towards self-management and trace defaulting patients, one could well ask: who will do the job? [25]. The inadequate supply and poor retention of skilled health professionals is deplored as the single most serious obstacle for implementing the national treatment plan in sub-Saharan Africa [26]. Thus far, the largely doctor- and nurse-driven implementation of ART has become increasingly unable to bridge the gap between the
ART clinics and the vast numbers of patients in need of treatment.

Recent studies have promoted task-shifting as a key strategy for overcoming the human resources bottleneck [27,28]. In 2008, the WHO defined task shifting as "the rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified health workers to health workers with shorter training and fewer qualifications in order to make more efficient use of the available human resources for health" [29]. Shifting tasks from medical doctors to non-physician clinicians and from these to nurses is increasingly recognized as a necessary condition for scaling up ART in sub-Saharan Africa. The WHO has identified the first as task shifting type I and the second as type II. However, in a context of human resource shortages for health – for example, in 2008, four out of every 10 professional nurse posts in South Africa were vacant [30] – task shifting from doctors to nurses will probably not be a sufficient solution to the human resource crisis. Recently, health systems research has increasingly explored the potential benefits of two other types of task shifting: namely, the shifting of tasks to lay community providers and counsellors (type III) and to the PLWHA themselves (type IV) [29].

However, an extensive literature review has demonstrated that – to date – little systematic scientific research has been performed on the contributory role of these community support and expert patient structures in HIV/AIDS treatment programmes and the health system at large in resource-limited countries [20,31]. The dearth of scientific evidence on the contributory role and function of these forms of community mobilization renders a formal evaluation and scientific review of the published results of existing community support and expert patient programmes a clear research priority. The current article therefore aims to extend the current literature by synthetically reviewing the available scientific evidence on the contribution of community mobilization to ART programmes in resource-limited settings, by focusing on both (1) the programme outcomes (coverage, adherence, virological and immunological outcomes, retention and survival) and (2) the mechanisms through which community support can overcome the five above-cited challenges to sustainably scaling-up ART in high HIV-prevalence resource-limited settings.

Methods
To assess the potential contribution of community support structures in scaling up ART, an extensive literature review was performed. As a result of the limited number of studies that have assessed the potential contribution of community support to ART programme outcomes, we decided to expand their geographical scope to all resource-limited countries.

Search strategy
To optimally capitalize on the relatively limited scientific information on the topic, the authors decided to apply a synthetic review design, a two-step approach which combines the strengths of a systematic review – gathering quantitative evidence on the effectiveness of community support – with additional attention for the social and behavioural mechanisms through which community support can help overcome the above-cited challenges – i.e. a realist evaluation approach [32].

Firstly, the current review aims to provide an exhaustive overview of the scientific evidence of the contribution of community support to ART programmes in resource-limited settings. To assess the achievements of community support programmes in producing favourable ART outcomes, we systematically reviewed published work (including e-publication ahead of print) for the period from November 2003 to December 2011 in accordance with the PRISMA guidelines [33]. We used the following medical subject headings and text strings: "HIV" OR "AIDS" AND "sub-Saharan Africa" OR "sub-Saharan Africa" OR "Southern Africa" OR "resource-limited country" AND "antiretroviral therapy" OR "ART" OR "HAART" AND "community support" OR "community health worker" OR "community care giver" OR "lay health worker" OR "DOT-HAART" OR "treatment buddy" OR "adherence supporter" OR "peer health worker" OR "expert patient" to identify research articles and policy documents on the achievements of ART-related community support programmes in the ISI Web of Knowledge, Science Direct, BioMed Central, OVID Medline, PubMed, Social Services Abstracts, and Sociological Abstracts. Relevant literature was also identified by checking the websites of the WHO, the World Bank, UNAIDS, and Health Systems Trust. Government publications and institutional reports released by non-governmental organizations and academic research centres were gathered. Finally, we checked the reference lists of the above cited sources for potentially relevant books, reports and papers.

In order to merge systematic review standards with the realist evaluation approach in a second step, the latter should be applied after finishing the review in accordance with the PRISMA guidelines. In this second stage, we search for the pathways (‘why’- and ‘how’-questions) though which community support – as described in the selected studies – can impact ART programme delivery and outcomes. This requires in-depth analysis of the argumentation by the selected authors with regards to the mechanisms, contexts and
outcomes of community support initiatives as part of ART programmes in resource-limited settings.

Selection criteria
As the selected topic is innovative and the number of available scientific studies assessing the contribution of community support to ART programmes is thus rather limited, we opted to include studies applying a wide range of research designs and community support typologies.

We included all quantitative and qualitative (English-language) research papers on the selected topic, as different perspectives on a similar topic are often complementary. We included randomized controlled trials, studies utilizing a comparison group (including pre-test, post-test design), retrospective cohort studies, descriptive studies, and qualitative studies.

Secondly, with regard to the study population, we included all studies whose study population consisted of HIV/AIDS-patients enrolled in an ART programme in a resource-limited setting and not purposefully selected for being on second-line treatment. ART was defined as treatment with at least three active antiretroviral medications, typically two nucleoside or nucleotide reverse transcriptase inhibitors (NRTI) plus a non-nucleoside reverse transcriptase inhibitor or a protease inhibitor or another NRTI called abacavir. We excluded articles which exclusively studied child or adolescent populations or articles reporting the accomplishments of ART programmes in resource-rich settings.

Thirdly, we opted for a broad perspective when assessing the types of community interventions included in the review. For inclusion, the studies had to comprise (1) lay members of the community (2) who enjoyed no or only limited training and (3) fulfilled a more or less organised role or function in the ART programme. This resulted in a wide range of community support initiatives (e.g. community health workers, community care workers, lay health workers, treatment buddies, field officers, peer educators/counsellors, adherence supporters, etc.). These broad criteria were chosen to capture all available evidence on the contribution of community support to ART delivery and outcomes in resource-limited settings. We did not include community-based ART programmes that lacked a clear community-based support component.

As the current review study is interested in both the impact of community support on programme outcomes and the mechanisms through which community support can overcome the five above-cited challenges to sustainably scaling-up ART in resource-limited settings, all studies that reported any type of outcome measure related to ART (including access, coverage, adherence, retention, virological and immunological outcomes, and survival), as well as all studies describing the context in which and the mechanisms through which community support can impact ART delivery and outcomes, were included.

Study selection
In accordance with the PRISMA guidelines, we first excluded all duplicates from our total of 2344 selected records. Secondly, two researchers independently reviewed all titles of the identified research papers and reports (1831 titles on community support and ART), with any differences being discussed and resolved. Of the remaining articles and reports (242 abstracts), the abstracts were assessed. In the third and final step, the authors retrieved and independently reviewed the full-length paper (81 papers) to screen it according to criteria of content (providing relevant information the impact of community support on ART outcomes (see above)) and quality (i.e. the study design, data collection methods, sampling strategy and analytic approach apparent and appropriate; is the context described sufficiently and the range of missing data acceptable and in accordance with the methodological requirements of a systematic review as specified by Mckee & Britton, Oxman, and Walsh? [34-36] (see Figure 1)). This resulted in 29 full-text articles and one policy report, a total of 30 publications, assessing the contribution of community support initiatives to the health of HIV patients on ART in 18 different resource-limited countries (Table 1) [20,21,23,27,37-62].

Analysis
In accordance with the methodological literature [63], we performed a systematic content analysis to produce a concise summary (Table 1) of the overall effect of community support interventions on ART programmes outcomes. However, Van de Knaap et al. [32] and Forbes & Griffiths [63] have already indicated that such a systematic review only demonstrates whether a policy intervention works or not, and not why or how it works. Therefore, the current review also used a realist evaluation strategy to assess the context of the studies and the mechanisms through which these community support initiatives can address the above-cited ART programme challenges, and thus contribute to a sustainable ART scale-up in resource-limited countries [32,63,64].

Results
Description of the community support programs
The selected articles reported on the outcomes of 22 different programmes in 18 countries. Only eight of the 30 selected papers (27%) were published in 2007 or earlier. All other papers were published more recently,
2332 records  
100 from Web of Knowledge  
58 from Science Direct  
605 from BioMed Central  
149 from Medline  
5 from Pubmed  
1411 from Social Services Abstracts  
4 from Sociological Abstracts

1831 records after duplicates are removed

Articles screened on the basis of title & abstract

1750 papers excluded  
544 Emphasis not on HIV/AIDS  
614 not in Resource-limited setting  
443 No community component  
149 Majorly non-adult population

81 full-text articles

Full text articles assessed for eligibility

51 papers excluded  
3 duplicate data  
2 non-English  
5 majority non-HAART  
4 majority second-line  
31 no explicit community support component  
8 majority not resource-limited setting

30 studies included

Figure 1 Search strategy and study selection using the PRISMA guidelines.

underlining the increasing relevance of and attention for this topic in health systems research.

As a consequence of the broad selection criteria – aiming to assess the impact of community support on ART programme outcomes as well as obtain a comprehensive overview of the potential contribution of these community support initiatives in addressing the five cited challenges to a sustainable ART scale-up – the 30 studies used a wide range of methodological designs: nine descriptive studies, five (cluster/nested-)randomised controlled trials, four quasi-experiments, five retrospective/observational cohort studies, and two qualitative
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Research design</th>
<th>N</th>
<th>Period</th>
<th>Title of lay providers</th>
<th>Results</th>
<th>Study limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboaaz (2008)</td>
<td>Uganda</td>
<td>Retrospective cohort study</td>
<td>897</td>
<td>&gt; 18 mo</td>
<td>Field officers</td>
<td>The AIDS Support Organization (TASO) ART programme displays good adherence and survival</td>
<td>- Retrospective design confounders included - Self-reported adherence bias</td>
</tr>
<tr>
<td>Assie (2009)</td>
<td>Ethiopia</td>
<td>Descriptive study</td>
<td>NA</td>
<td>&gt; 36 mo</td>
<td>Health extension workers</td>
<td>Substantial expansion of HIV/AIDS and ART services in resource-limited context</td>
<td>- Descriptive study design - No measurement of theoretic support - Secondary and income</td>
</tr>
<tr>
<td>Bedeluy (2007)</td>
<td>South Africa</td>
<td>Descriptive study</td>
<td>1025</td>
<td>20 mo</td>
<td>HIV/AIDS counselors &amp; CHWs</td>
<td>MSF programme using task-shifting and community support achieved near universal coverage without compromising quality of care</td>
<td>- Descriptive study design - No measurement of theoretic support</td>
</tr>
<tr>
<td>Benavides (2006)</td>
<td>Venezuela, Nicaragua, and Argentina</td>
<td>Descriptive report</td>
<td>5854</td>
<td>NC</td>
<td>Field officers</td>
<td>Field officers encourage adherence, refill medications and promote family support on behalf of ARV patients</td>
<td>- Descriptive study design - No measurement of theoretic support</td>
</tr>
<tr>
<td>Cephaloni (2008)</td>
<td>Brazil, Ethiopia, Malawi, Namibia, and Uganda</td>
<td>Desk review, observation &amp; key informant interviews</td>
<td>NA</td>
<td>NA</td>
<td>CHWs</td>
<td>Under certain conditions, the delegation of specific tasks to CHWs can increase access to HIV services and improve quality of care</td>
<td>- No clear literature search - No clear quality assessment, data collection</td>
</tr>
<tr>
<td>Chang (2009)</td>
<td>Uganda</td>
<td>Retrospective cohort study</td>
<td>360</td>
<td>24 mo</td>
<td>Peer health workers</td>
<td>Good adherence and survival in community-based HIV/AIDS care programme</td>
<td>- Retrospective study design - Reliance on clinical and administrative records - Underestimation of survival rates - Outcome measurement intervals</td>
</tr>
<tr>
<td>Chang (2009)</td>
<td>Uganda</td>
<td>Cluster-randomized trial</td>
<td>1336</td>
<td>&gt; 22 mo</td>
<td>Peer health workers</td>
<td>A peer health worker intervention was associated with lower virologic failure but did not affect cumulative virologic failure, adherence measures or virologic outcomes</td>
<td>- Limited generalisability - Weakness of design: intention to treat analysis - Limited statistical power</td>
</tr>
<tr>
<td>Cohen (2009)</td>
<td>Lesotho</td>
<td>Descriptive study</td>
<td>5376</td>
<td>40 mo</td>
<td>HIV/AIDS counselors</td>
<td>Lay counsellors supported testing and counselling, adherence and case management produced favourable outcomes</td>
<td>- Descriptive study design - Causal relationships - No measurement of theoretic support</td>
</tr>
<tr>
<td>Etienne (2009)</td>
<td>Kenya, Rwanda, Uganda, Tanzania, Zambia, Nigeria, Haiti, and Guyana</td>
<td>Descriptive study</td>
<td>1339</td>
<td>&gt; 2 mo</td>
<td>Adherence supporters</td>
<td>Adherence counselling, structured treatment preparation, community home visits, and supportive supervision by community nurse significantly reduced the loss to follow-up</td>
<td>- Descriptive study design - Causal relationships - Potential selection bias</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Study Design</td>
<td>Duration</td>
<td>Participants</td>
<td>Setting</td>
<td>Findings</td>
<td>Limitations</td>
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<tr>
<td>Gudal et al. (2009)</td>
<td>Ethiopia &amp; Uganda</td>
<td>Qualitative study</td>
<td>18</td>
<td>NA</td>
<td>Peer counsellors served as facilitators of adherence, role models and bridges to the health system</td>
<td>- Selection bias; no information on data collection methods; - No clear methodology;</td>
<td></td>
</tr>
<tr>
<td>Hermann (2009)</td>
<td>Ethiopia, Malawi, and Uganda</td>
<td>Desk review &amp; descriptive field research</td>
<td>NA</td>
<td>NA</td>
<td>CHWs</td>
<td>Present CHW programmes are essential for ART scale-up and comprehensive care but have insufficient attention to quality supervision, continuous training, and the life experience of PLHWA</td>
<td>- Saturating data not available; - No clear literature search; - No clear methodology;</td>
</tr>
<tr>
<td>Idoko (2007)</td>
<td>Nigeria</td>
<td>Quasi-experiment</td>
<td>175</td>
<td>12 mo</td>
<td>DOF ART supporters</td>
<td>Patients accessing treatment support (daily/twice weekly/weekly observed therapy) demonstrated better treatment outcomes compared to control group</td>
<td>- Limited generalisability; - Small sample size; - No statistically significant difference; - Retrospective study design; - No measurement of community support</td>
</tr>
<tr>
<td>Igumbor (2003)</td>
<td>South Africa</td>
<td>Retrospective patient record review</td>
<td>540</td>
<td>9 mo</td>
<td>CHWs</td>
<td>Patients with community adherence support maintained a suppressed VL and remained in care for a longer period as compared to patients lacking this support</td>
<td>- Refusals and withdrawals; - Weakness of design; - No measurement of community support;</td>
</tr>
<tr>
<td>Jaller (2009)</td>
<td>Uganda</td>
<td>Cluster-randomised equivalence trial</td>
<td>1453</td>
<td>42 mo</td>
<td>Field officers</td>
<td>Home-based HIV care was as effective as facility-based care: similar virological failure and mortality rates</td>
<td>- Observational study design; - Potential selection bias; - High rate of patients lost to follow-up; - Descriptive study design; - No measurement of community support</td>
</tr>
<tr>
<td>Kabore (2010)</td>
<td>Lesotho, South Africa, Namibia, and Botswana</td>
<td>Observational cohort study</td>
<td>377</td>
<td>18 mo</td>
<td>CHWs, HBC volunteers &amp; adherence supporters</td>
<td>Community support was associated with more rapid and greater CD4 increase and higher levels of adherence. Home-based care and/or care support was associated with greater improvements in HRQoL.</td>
<td>- Limited generalisability; - Potential selection bias; - Limited statistical power;</td>
</tr>
<tr>
<td>Koenig (2004)</td>
<td>Haiti</td>
<td>Descriptive study</td>
<td>1050</td>
<td>12 mo</td>
<td>CHWs</td>
<td>DOH-HAART using CHWs resulted in good virological suppression and high survival rates</td>
<td>- Descriptive study design; - No measurement of community support; - Programme's intensiveness; - Descriptive study design; - No measurement of community support; - Descriptive study design;</td>
</tr>
<tr>
<td>Kunurser (2009)</td>
<td>Uganda</td>
<td>Randomized controlled trial</td>
<td>174</td>
<td>7 mo</td>
<td>Adherence supporter</td>
<td>Patients with an adherence supporter had higher treatment adherence rates and were more likely to be on time for their clinical appointments</td>
<td>- No measurement of community support; - Programme's intensiveness; - Descriptive study design; - No measurement of community support;</td>
</tr>
<tr>
<td>Morris (2009)</td>
<td>Zambia</td>
<td>Descriptive study</td>
<td>NA</td>
<td>36 mo</td>
<td>Peer health workers</td>
<td>Improved clinical care quality despite growing patient volumes</td>
<td>- Limited generalisability; - Potential selection bias; - Limited statistical power;</td>
</tr>
<tr>
<td>Mulherjee (2006)</td>
<td>Haiti</td>
<td>Descriptive study</td>
<td>1500</td>
<td>12 mo</td>
<td>CHWs</td>
<td>Home-based adherence support from a network of CHWs produces low rates of treatment failure</td>
<td>- Descriptive study design; - No measurement of community support;</td>
</tr>
<tr>
<td>Mulherjee (2007)</td>
<td>Haiti</td>
<td>Descriptive study</td>
<td>NA</td>
<td>NA</td>
<td>CHWs</td>
<td>CHWs facilitate the uptake of PHC services, including by the most vulnerable households</td>
<td>- Descriptive study design; causal relationships;</td>
</tr>
</tbody>
</table>

**Notes:**
- CHWs: Community Health Workers
- DOF: Direct Observation of Treatment
- HBC: Health Belief Counselor
- PLHWA: People Living with HIV/AIDS
- VL: Virus Load
- HRQoL: Health-Related Quality of Life
- PHC: Primary Health Care
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Design</th>
<th>N</th>
<th>Duration (mo)</th>
<th>Intervention</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muñoz (2010)</td>
<td>Peru</td>
<td>Quasi-experiment</td>
<td>120</td>
<td>12</td>
<td>CHWs &amp; DOT ART supporters</td>
<td>CASA (community-based accompaniment with supervised antiretroviral) participants reported better clinical and psychosocial outcomes compared to control group</td>
</tr>
<tr>
<td>Nachega (2010)</td>
<td>South Africa</td>
<td>Randomized controlled trial</td>
<td>274</td>
<td>24</td>
<td>DOT ART supporter</td>
<td>DOT-ART was associated with greater median CD4-cell count and better survival rates, but not with improved virological outcomes</td>
</tr>
<tr>
<td>Pearson (2007)</td>
<td>Mozambique</td>
<td>Randomized controlled trial</td>
<td>350</td>
<td>12</td>
<td>Peer DOT ART supporters</td>
<td>Intervention participants demonstrated significantly higher ART adherence</td>
</tr>
<tr>
<td>Rich et al. (2012)</td>
<td>Rwanda</td>
<td>Retrospective medical record review</td>
<td>'04-08</td>
<td>24</td>
<td>CHWs</td>
<td>Community-based ART produced very high levels of retention and large increases in CD4 cell count. However, the relative impact of the different components of the program could not be determined.</td>
</tr>
<tr>
<td>Sèle (2010)</td>
<td>Kenya</td>
<td>Randomized controlled trial</td>
<td>208</td>
<td>12</td>
<td>CCCs</td>
<td>Community-based care by P.L.W.As resulted in similar clinical outcomes as standard care but with half the number of clinical visits</td>
</tr>
<tr>
<td>Weidie (2009)</td>
<td>Uganda</td>
<td>Nested randomised trial</td>
<td>987</td>
<td>12</td>
<td>HIV/AIDS counsellors &amp; Field officers</td>
<td>Group education, personal adherence plans, a medicine companion and home-delivery of ARVs by lay counsellors achieved good ART adherence and response</td>
</tr>
<tr>
<td>Woolf-Kaloustian (2009)</td>
<td>Kenya</td>
<td>Quasi experiment</td>
<td>NA</td>
<td>24</td>
<td>CCCs</td>
<td>An ART delivery model that shifts patient monitoring and ARV dispensing to CCCs is both acceptable and feasible</td>
</tr>
<tr>
<td>Wothers (2009)</td>
<td>South Africa</td>
<td>Retrospective cohort study</td>
<td>371</td>
<td>24</td>
<td>CHWs &amp; adherence supporters</td>
<td>Community support predicted better viral suppression and immunological restoration rates</td>
</tr>
</tbody>
</table>

- No measurement of impact of community support
- Limited representation
- Small sample size
- Potential selection bias (confounding differences)
- Limited generalisability
- Limited time frame of study
- Relatively low incidence of ART
- Initial phase of ART programmes
- No binding of the patient
- Self-reported adherence
- Limited generalisability
- Descriptive study design
- Causal relationships
- No measurement of ART adherence
- Low data completeness
- Potential selection bias
- Limited generalisability
- Selection bias: different patients included
- Small sample size (limited generalisability)
- Selection bias: participation of AIDS organisation
- Limited statistical power
- No measurement of ART adherence
- Limited generalisability
- Programme's intensive focus
- Study design: patients
- Potential selection bias (confounding differences)
- Underestimation of survival rates
<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Study Design</th>
<th>N</th>
<th>Time</th>
<th>CHWs &amp; Adherence Supporters</th>
<th>Community Support Initiatives (CHWs and support groups) positively impacted disclosure to family members</th>
<th>Study design: patients receive support</th>
<th>Potential selection bias (confounding differences)</th>
<th>Study design: not possible to distinguish the observed differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wouters</td>
<td>South Africa</td>
<td>Retrospective cohort study</td>
<td>371</td>
<td>24 mo</td>
<td>CHWs &amp; adherence supporters</td>
<td>Community support initiatives (CHWs and support groups) positively impacted disclosure to family members</td>
<td>Study design: patients receive support</td>
<td>Potential selection bias (confounding differences)</td>
<td>Study design: not possible to distinguish the observed differences</td>
</tr>
<tr>
<td>Zachariah</td>
<td>Malawi</td>
<td>Quasi-experiment</td>
<td>1634</td>
<td>20 mo</td>
<td>HBC volunteers</td>
<td>Community support was associated with significantly lower death rate and better ART outcomes</td>
<td>Study design: patients receive support</td>
<td>Potential selection bias (confounding differences)</td>
<td>Study design: not possible to distinguish the observed differences</td>
</tr>
</tbody>
</table>

NA = not applicable, NC = not clear, mo = months.