



HHS Public Access

Author manuscript

J Acquir Immune Defic Syndr. Author manuscript; available in PMC 2016 January 12.

Published in final edited form as:

J Acquir Immune Defic Syndr. 2015 April 15; 68(0 3): S368–S374. doi:10.1097/QAI.0000000000000519.

The Impact of Support Groups for People Living with HIV on Clinical Outcomes: a systematic review of the literature

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Abstract

Background—Support groups for people living with HIV (PLHIV) are integrated into Human Immunodeficiency Virus (HIV) care and treatment programs as a modality for increasing patient literacy and as an intervention to address the psychosocial needs of patients. However, the impact of support groups on key health outcomes has not been fully determined.

Methods—We searched electronic databases from January 1995 through May 2014 and reviewed relevant literature on the impact of support groups on mortality, morbidity, retention in HIV care, quality of life, and ongoing HIV transmission, as well as their cost effectiveness.

Results—Of 1809 citations identified, 20 met inclusion criteria. One reported on mortality, seven on morbidity, five on retention in care, seven on quality of life, and seven on ongoing HIV transmission. Eighteen (90%) of the articles reported largely positive results on the impact of support group interventions on key outcomes. Support groups were associated with reduced mortality and morbidity, increased retention in care and improved quality of life. Due to study limitations, the overall quality of evidence was rated as fair for mortality, morbidity, retention in care, and quality of life, and poor for HIV transmission.

Conclusions—Implementing support groups as an intervention is expected to have a high impact on morbidity and retention in care and a moderate impact on mortality and quality of life of PLHIV. Support groups improve disclosure with potential prevention benefits but the impact on ongoing transmission is uncertain. It is unclear if this intervention is cost-effective given the paucity of studies in this area.

Keywords

Support groups; clinical; outcomes; developing countries; PLHIV

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Disclaimer: The findings and conclusions in this article are those of the authors and should not be construed to represent the positions of the U.S. Department of State's Office of the U.S. Global AIDS Coordinator, the U.S. Centers for Disease Control and Prevention or the United States Agency for International Development or the U.S. Federal Government.

The authors have no conflicts of interest to disclose

Introduction

HIV programs use support groups as an opportunity for health care workers to provide information to people living with HIV (PLHIV). HIV post-test clubs were among the first support groups to be utilized to provide support to clients who tested positive for HIV.¹ The World Health Organization (WHO) proposes support groups as an intervention to address retention and adherence among PLHIV receiving ART.²

Both WHO and the President's Emergency Plan for AIDS Relief (PEPFAR) promote peer support groups facilitated by trained PLHIV to address the special needs of fellow PLHIV and their partners.^{3,4} Such groups serve the purpose of sharing experiences, encouraging disclosure, reducing stigma and discrimination, improving self-esteem, enhancing patients' coping skills and psychosocial functioning and supporting medication adherence and improved retention in HIV care.^{5,6,7} These benefits can be maximized further if the support groups are formed around specific populations such as men who have sex with men, pregnant women, adolescents, or couples in discordant relationships. Support groups are also considered an intervention in the management of mental health issues, including alcohol and other substance abuse disorders.²

Support groups are generally initiated and supported by non-governmental organizations (NGOs), civil society or community-based organizations and may convene in a health facility or in the community.

Disclosure of HIV positive status, one of the potential benefits of support groups, has broad prevention implications and is emphasized by both the WHO and the Centers for Disease Control and Prevention (CDC) in all HIV testing protocols.^{8,9} The Mentor Mother support group model — utilizing mothers living with HIV—is a key strategy in the United Nations Global Plan for elimination paediatric AIDS by 2015 and for keeping mothers alive.¹⁰ The Mentor Mothers is considered an effective intervention to improve maternal and infant well-being among women living with HIV. They work alongside health care workers in the clinic and at community meetings to provide health education, to promote adherence to antiretroviral therapy (ART), and to promote disclosure of HIV status among other services.¹¹

Although the WHO and PEPFAR promote the role of support groups^{2,4}, evidence of their impact on key health outcomes has not been assessed. This article presents the results of a systematic review of studies examining the evidence of impact of support groups on mortality, morbidity, retention in care, quality of life, and HIV transmission, and determining whether they are cost-effective.

Methods

This review was conducted as part of an assessment of 13 care and support interventions funded by PEPFAR.¹² Details about the interventions and methods for the review including the general search strategy are described fully in the introductory article to this supplement.¹³

The review team conducted a systematic search of the literature using: Medline (via PubMed), EMBASE, Global Health, CINAHL (Cumulative Index to Nursing and Allied Health Literature), SOCA (Sociological Abstracts) and AIM (African Index Medicus) from January 1995 through May 2014 using the following Medical Subject Headings (MeSH) terms: HIV, community support, social support group, informal group, PLHIV network, PLHIV group, volunteer group, support group, self-help group, self-help, peer support and peer support group. These were used in addition to the general search terms described in the introductory article.¹³

The authors reviewed the citations and abstracts independently and identified studies that appeared to address support group interventions and at least one of the outcomes of interest. For these “eligible” studies, full-text articles were obtained and evaluated independently by two authors. Studies that met the following criteria were “included” in the review: (1) evaluated the impact of HIV support groups; 2) were conducted in resource-limited settings; and 3) addressed one or more of the outcomes of interest -- mortality, morbidity, retention in HIV care, quality of life, or prevention of ongoing HIV transmission. Costing and cost-effectiveness outcomes where available were also considered.

The following data were abstracted from each study that fulfilled the inclusion criteria; study characteristics (citation, design, study year and year of publication); key findings (the magnitude of effect of the intervention, presented as hazard ratios, odds ratios, or relative risk and 95% confidence intervals); and the quality of evidence. For the latter, we assessed the internal and external validity and other factors and rated the quality of evidence of each study as *strong, medium or weak*. Qualitative studies were rated on a scale of I-IV based on methods adapted from Daly et al.¹⁴ The methods for rating study quality are described in detail in the introductory paper in this supplement.¹³

Variability in the intervention, study design, and study population precluded combining study results or meta-analysis. Instead the review team summarised results from all studies that reported on each outcome. We rated the overall quality of evidence for each outcome as *good, fair or poor* based on criteria developed *a priori*. We then rated the expected impact — based on the magnitude of effect reported in individual studies, the quality of the body of evidence (all studies addressing each outcome), and consistency of results across the studies — of the intervention on each outcome as *high, moderate, low or uncertain* (further details regarding rating of quality of evidence for individual studies, and quality of evidence and expected impact for each outcome can be found in the introductory paper in this supplement).¹³

Results

We screened 1,809 abstracts and deemed 137 of the studies to be “eligible” (Fig. 1). Full-text articles of these 137 studies were reviewed; 20 met “inclusion” criteria. Studies that were not “included” either did not address support groups as an intervention or did not report on any of the outcomes of interest. Characteristics of the 20 included studies are presented in Table 1. Six articles reported on multiple outcomes while 14 addressed one outcome of interest (Table 1). The majority of studies were conducted in sub-Saharan

Africa: South Africa, n=7^{15, 18, 22, 26, 32, 35, 36}; Kenya, n=2^{23, 30}; Mozambique, n=2^{17, 17}; and one each from Nigeria²⁵, Rwanda²⁴, Tanzania²¹, Uganda³¹ and Zimbabwe.²⁷ Two studies were conducted in Vietnam^{33, 34}; the remaining two reported multi-country results.^{19, 20}

Most studies (18) were observational—using either a cross-sectional or cohort design (11), a qualitative (5), or a mixed methods study design (2); and two were experimental studies-- an unblinded randomised controlled study (RCT)²¹ and a study using a quasi-experimental design.²² Sample sizes ranged from 21 in a qualitative study to over 300,000 in a multi-country observational cohort. Three studies targeted only women; one recruited only men; the remaining studies (n=16) included both men and women. In addition to being enrolled in support groups, PLHIV often received other interventions, such as being seen by community health workers or being assigned treatment buddies. Table 1 presents further details on the characteristics and findings from the 20 individual studies.

Outcomes, Quality of the Evidence and Expected Impact

Mortality—One study examined the effect of support groups on mortality. Decroo et al., reporting on a Mozambique cohort, found a mortality rate among 5729 individuals enrolled in Community Adherence Groups (CAGs) of only 2.1 per 100 person-years (PYs) and a loss to follow-up (LTFU) rate of 0.1 per 100 PYs. Only 208 (3.6%) were reported as dead after a median follow-up time of 19 months (IQR 10–29).¹⁷ The authors also reported an overall attrition of 3.9% mostly from mortality (3.7%) and the rest from LTFU (0.2%). Factors associated with attrition (both mortality and LTFU) were presented at individual and group level. At the individual level, attrition in CAGs was associated with a low CD4 count at the time of enrolment in CAG (aHR 2.28, 95% CI 1.60–3.24) and being male (aHR 1.93, 95% CI 1.48–2.51). At the group (CAG) level, lack of rotational representation by each of the different group members at the clinic (aHR 1.72, 95% CI 1.27–2.33), lack of regular CD4 count ascertainment among members of the same group (aHR 1.88 95% CI 1.18–3.00), and attending a rural (aHR 2.59, 95% CI 1.81–3.70) or district clinic (aHR 1.57, 95% CI 1.14–2.16) were associated with higher attrition. There was no comparison group.

Reviewers rated the “overall” quality of evidence for the outcome of mortality as *fair*. However, the expected impact on mortality was rated as *moderate* based on the low mortality rate among those who participated in the support groups in this study (Table 2).

Morbidity—Seven studies^{15, 18, 21, 23–26} reported on the impact of support group interventions on a range of morbidity outcomes (Table 1).

Support groups were associated with reduced frequency of HIV-related symptoms—somatic symptoms, anxiety and insomnia¹⁸ and depression^{21, 25, 26}. Other benefits included improved access to ART, adherence to ART and treatment success^{15, 23, 24, 27}, measured as time to treatment failure and reduced risk of detectable viremia or change in CD4 cell count. For example, Achieng et al. reported that time to treatment failure was longer in patients participating in support groups (448 days vs. 337 days, P=0.001).²³ Results from a South African cohort of 268 PLHIV enrolled in the public sector HIV treatment program reported participation in a support group as a predictor of treatment success (i.e. viral load < 400

copies/mL, CD4 > 200 cells/mL), during the first six, 12 and 24 months of antiretroviral therapy.¹⁵ Support group participants were significantly more likely to have an undetectable viral load ($P < 0.001$) and a CD4 cell count > 200 cells/mL at 12 months ($P < 0.01$) than those who did not participate in a support group. Viral load suppression was maintained beyond 24 months after enrolment in a support group ($P < 0.01$). In the Muchedzi study, women tested for HIV in a prevention of mother to child transmission (PMTCT) program and enrolled in a support group were twice as likely to access care and treatment (OR = 2.34, 95% CI 1.13–4.88) although their treatment outcomes were not reported.²⁷ Outcomes from the remaining five studies are presented in Table 1.

Although findings from the seven studies consistently reported morbidity benefits, reviewers rated the overall quality of evidence as *fair* based on limitations of the included studies. Almost all were cross sectional, qualitative or had small sample sizes. In addition, different morbidity-related outcomes were reported. Nevertheless, the expected impact of support groups on reducing morbidity in PLHIV was rated as *high* based on significant associations between support group participation and decrease in morbidity from studies from six different countries.

Retention in Care—Five studies^{15–17, 19, 27} -- two from the same Mozambique cohort [16, 16] -- reported low LTFU for patients on ART participating in support groups. Decroo et al. reported high retention with approximately 97.5% patients remaining in care for a median follow-up period of 12.9 months (range 8.5–14 months)¹⁶ and 91.8% at 4 years.¹⁷ Overall, the authors reported that attrition in the cohort was lower than the national 12 month average for Mozambique (15%)²⁸ and lower still than rates reported in the literature for sub-Saharan Africa (1.2–26%).²⁹ A large study with more than 300,000 participants aged 10–24 years from four sub-Saharan countries showed that youth participating in support groups provided by clinics experienced slightly lower attrition after ART initiation (AHR=0.73, 95% CI: 0.52–1.0); in the pre-ART period, the authors reported no significant associations between attrition and participation in support groups or other adolescent friendly services—availability of adolescent peer educators, or education on high-risk substance abusing behaviour.¹⁹ Higher retention among support group participants was also reported among patients on ART in South Africa¹⁵ and among women enrolled in the PMTCT program in Zimbabwe²⁷ (Table 1).

Reviewers categorized the quality of evidence for this outcome as *fair*. All five studies were observational. Sample sizes were small for two of the studies^{15, 27} and the findings from the larger study¹⁹ are not generalizable beyond the 10–24 year age group. Lack of a comparison group in two studies^{16, 17} and other methodological limitations affected the quality of evidence for this outcome. The expected impact of support groups on retention was rated as *high* for patients on ART but *uncertain* for pre-ART patients (Table 2).

Quality of Life—Seven studies—five qualitative^{30–34}, one quasi experimental²² and another using mixed methods¹⁸ — reported associations between membership and/or attendance at support groups and several measures of quality of life (QOL) (Table 1). Measures varied by study and included reported improvement in symptoms, improved confidence and self-esteem, better coping skills, and perceived reduction in stigma. The

authors reported that support group participation enabled patients to seek care³¹ and start ARVs.³⁴ Other benefits reported by Kim et al. were spill-over effects to the community in which HIV-infected persons who were not in support groups were encouraged to seek care.³¹ While the benefits were mostly positive, Mfecane et al. reported that a cohort of men who attended support groups felt that participation imposed pressure to conform in a way that negatively affected their perception of masculinity.³² Dageid et al. reported negative effects such as inadvertent disclosure of HIV-positive status and gossip and stigmatization from other support group members and/or the community.¹⁸

Reviewers categorized the quality of evidence for this outcome as *poor*. Four of the studies were qualitative^{30, 31, 33, 34} and most had small sample sizes. One reported only on men³² and three only on women^{22, 30, 33} limiting generalizability of the findings. Despite the limitations in some of the studies the expected impact on quality of life was rated as *moderate* (Table 2) based on consistently positive results on quality of life across studies.

HIV transmission—Seven studies^{20, 21, 30, 31, 35–37} reported on outcomes which may directly or indirectly impact HIV transmission, such as risky sexual behaviour and disclosure of HIV-positive status to sex partners. Three of the seven studies were conducted in South Africa^{15, 35, 36} (Table 1). Gaede et al. reported positive associations between attendance at support groups and health behaviours and condom use.³⁵ Four studies^{20, 21, 36, 37} reported mixed results regarding the association between support group participation and disclosure of HIV status: Skogmar found no significant difference in disclosure rates between those who attended only pre/post-test counselling (standard of care) and those who received either professional counselling or participated in support groups.³⁶ Wouters reported that assistance of community health workers and support group participation resulted in disclosure of HIV status to non-family members only in the second year of implementation of the program; however, the impact of support groups alone was not reported.³⁷ Hardon et al., in a mixed methods study involving participants from four African countries (Burkina Faso, Kenya, Malawi, Uganda), showed that membership in a support group was associated with not disclosing to partners for fear of stigma — the experience of prejudice and discrimination as the consequence of being HIV- positive.²⁰ Additionally, although an unblinded randomized control study conducted in Tanzania reported a 20% increase in disclosure for support group participants compared to controls, the difference was not statistically significant (RR=1.2, 95% CI: 0.91–1.6, P=0.19) and 12% of those who gave feedback about the disclosure reported negative reactions such as anger, blame and being told to leave the household.²¹ Two articles reported an association between support group attendance and increased disclosure to spouses and other family members.^{30, 31}

Reviewers categorized the quality of evidence from the seven studies as *poor* and the expected impact on HIV transmission as *uncertain*.

Discussion

We identified 20 studies from low- and middle-income countries which evaluated the impact of support groups on mortality, morbidity, retention in care, quality of life or HIV

transmission. No studies reported costing or cost-effectiveness data. The studies were primarily from sub-Saharan Africa and varied in study design, target population and sample size.

The review found largely positive results. Although limited by the quality of the included studies, the data suggest potential benefit of support groups on key health outcomes. We rated the expected impact of support groups as an intervention in PLHIV as high in terms of reducing morbidity and improving retention in care. Support groups also have the potential to influence mortality, quality of life and prevention of ongoing HIV transmission. Specific positive benefits associated with support group membership include enhancing treatment success and improving the quality of life through equipping PLHIV with coping skills.

With development of community-based care models in some settings, support groups could provide an opportunity for PLHIV to share experiences and become more engaged in their care. Given the severe human resource challenges in sub-Saharan Africa, specifically the shortage of trained health care providers³⁸, support groups can play an increasingly larger role in care models, particularly with regard to retaining HIV-infected persons in care. Based on success of the pilot program developed by Médecins Sans Frontières (MSF) and provincial health officials in Mozambique reported in this review^{16, 17}, the Mozambique Ministry of Health is scaling up CAGs nationally.

We did not specifically search for adherence as an outcome in this review. However five studies reported increased adherence to ART^{15, 23, 24, 32} associated with support group participation. In Wouters et al., 89.9% of support group members reported that support group meetings helped create a forum for sharing knowledge and experiences, some of which related to taking medications. In Mozambique PLHIV enrolled in support groups reported increased adherence.¹⁶

Two studies described negative outcomes. In a South Africa study, male participants in support groups felt under pressure to conform to a lifestyle that was not consistent with established gender roles³², while a large mixed methods study with participants from Burkina Faso, Kenya, Malawi and Uganda showed that membership in a support group was associated with non-disclosure to partners.¹⁹ These issues will need to be addressed to maximize the potential of support groups as an intervention.

Limitations

Conclusions of this review should be interpreted with caution given the methodological limitations and relatively small number of studies. The majority of the studies were observational, eight employed qualitative methods, three studies enrolled less than 70 participants each^{17, 29, 32}, one study included only men³² and three recruited only women.^{22, 27, 30} Therefore, the findings may not be generalizable to the broader community and to other patient populations. Additionally, PLHIV participating in support groups often received other interventions. The impact of the other interventions or their combination may have influenced the results reported in this review. Evidence from this review may not be adequate to inform major policy changes regarding the role of support groups.

Research Gaps

Although this review has provided useful information regarding support groups, there are information gaps. Which patients are most in need of support group participation? What venues are optimal, and how do these depend on the populations participating? Who should lead the support groups? What specific considerations should be given to newly diagnosed patients, men, women, key population groups, and those starting ART?

Cost-effectiveness of the intervention is an outstanding issue. None of the studies included costing data; nor were they designed to test effectiveness for the outcomes under review. The Mozambique CAG pilot was successful in part because over a quarter (28%) of the members shared the cost of transport. It is unclear if other types of support groups would be feasible and sustainable in their respective settings. Programs already underway such as the national rollout of CAGs in Mozambique should be rigorously evaluated. Data from these evaluations could be useful for national governments and donor funding decisions.

Programmatic Considerations for Implementation

It is apparent from this review that support groups have the potential to play an important role in HIV care and treatment programs, in terms of having impact on key health outcomes and in retaining HIV-infected persons in care. They may also provide an alternative care model towards attaining universal access to ART in settings where long distances to health facilities, shortage of human resources and waiting times remain barriers to HIV care. Implementation issues and challenges were beyond the scope of this review; however, several merit discussion: membership and access; resources and sustainability; monitoring and evaluation, and models of implementation.

Regarding membership, not all patients need or want to participate in support groups, and health care facilities may not be able to accommodate all patients who might benefit from a support group intervention. Therefore it is important to target support group resources to those who might benefit the most. For example, support groups targeting key populations could be useful in settings with high levels of stigma and discrimination directed towards PLHIV. In this review, most support groups were formed to support patients on ART. Programs for pre-ART patients should be developed to determine whether these patients might benefit from support group participation. Implementers should identify motivators for attendance and also, perhaps, criteria to determine when participation might no longer be necessary. The needs for patients in urban vs. rural HIV care programs may differ significantly.

Secondly, resources are needed to start and maintain support groups-- both human and infrastructural. Support group programs require physical meeting space away from crowded health facilities; they may require phone credit, transportation support, and refreshments during meetings, among other needs. Training in facilitation skills and capacity building are especially important to foster free expression and to encourage full participation. The actual costs associated with running support groups are difficult to estimate in part due to lack of accurate data on the number of PLHIV who currently access services. The comparative evaluation of different models would enrich our knowledge of which support group models

to scale up. Programs should understand how best to make support groups self-sustaining and less dependent on donor funding. Early lessons from Mozambique suggest that the CASG support group model is self-sustaining and could potentially be replicated in other settings.

Thirdly, for donors and ministries of health that fund support groups, monitoring and evaluation metrics are important to assess the value of support group interventions. Community level HIV indicators, including those that measure linkage between facilities and the community and retention in support group programs will be important to develop to monitor success and to ensure accountability.

Lastly, support groups are yet to be formalized as standard practice in HIV care and treatment programs; inadequate data as evident in this literature review are one of the challenges. Models for such programming need to be explored. For example, a model that links community-based support groups to an assigned health facility in a hub-and-spoke fashion with a formalized system for bidirectional referral would be useful to explore.

Conclusion

Implementing support groups in PLHIV is likely to have an impact on morbidity and retention in care and has the potential to improve quality of life and mortality. Additional research and operational lessons are needed to maximize the benefits of support groups as an integral component of HIV care and treatment.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

“This research has been supported by the President’s Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention (CDC) and the United States Agency for International Development (USAID).”

The authors would like to acknowledge the following individuals who participated in the evidence review: From the CDC Library, Gail Bang and Emily Weyant who conducted the literature searches and; Ratanang Balisi from USAID (Botswana) and Peter Vranken from CDC (South Africa) who helped screen citations.

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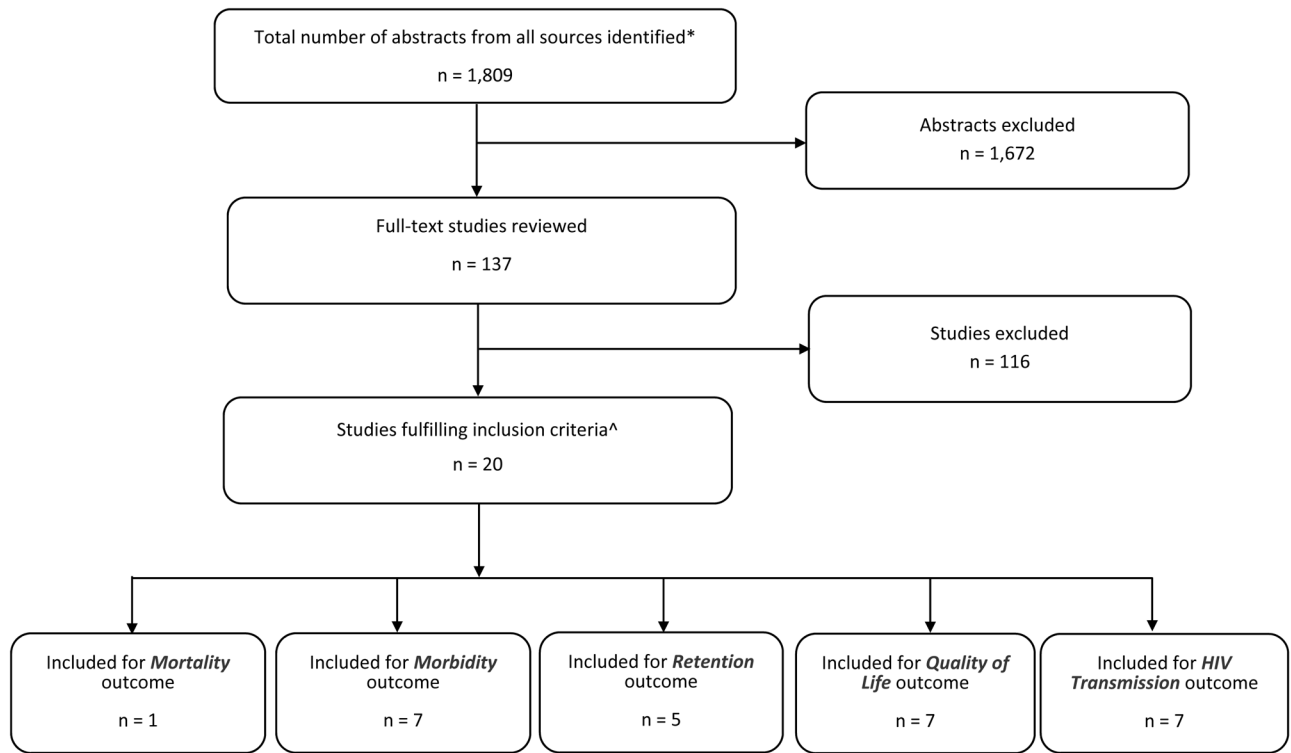


Figure 1. Study flow diagram

Total number of studies identified; screened; eligible and included in the systematic review of support groups for People Living with HIV January 1990- May 2014.

* Duplicate citations removed.

^ Numbers below in outcome section add up to more than 20 as some studies addressed more than one outcome.

Table 1

Assessment of individual studies on support groups (SGs) by outcome

Study Characteristics				Key Findings (Magnitude of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No;	Comments
Citation	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Internal	External		
Mortality									
Decroo J, et al. ¹⁷	Cohort	2/2008–12/2012 Mozambique	5729 community adherence group (CAG) members	Mortality rates among 5729 CAG members was, 2.1 per 100 person-years (PYs). Of the 5729 adult CAG members, only 208 (3.6%) died after a median follow-up time of 19 months (IQR 10–29). Factors associated with LTFU and mortality were presented together.	Fair	Good	Medium	No data	There was no comparison group; instead the authors in their discussion quoted mortality from a cohort in Mozambique, 17.4% (14.9–20.0) were known to have died (Wandeler et al).
Morbidity									
Wouters E, et al. ¹⁵	Prospective cohort	2004–2007, S. Africa	268, Assessed community support (CHWs, SGs, Treatment buddies on VL, CD4)	At 12 months, SG participants were significantly more likely (β 0.12, $P < 0.001$) to have an undetectable viral load and a CD4 cell count above 200 cells/mL than those who did not participate in a SG. Similar	Fair	Good	Medium	No data	SG meetings were at the clinic-67.3%, church-6.0%, home of a SG member-9.7%, hospice-3.9%. Most met once a week-59.6%, 21.2% met 2–3 times/month 19.2% only once a month. VL

Citation	Study Characteristics			Key Findings of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No)	Comments	
	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Internal	External			Quality of Evidence (Strong, Medium, Weak)
AchiengL, et al. ²³	Prospective observational cohort	11/2009–4/2010, Kenya	301 assigned to various adherence interventions incl. SGs. End points: time to treatment failure, stoppage of ART; death; or loss to follow-up	outcomes were maintained 24 months after enrolment (outcomes were maintained 24 months after enrolment (outcomes were maintained 24 months after enrolment (0.13, P < 0.01)	Fair	Fair	Medium	No data		
Dageid, W, et al. ¹⁸	Mixed methods- Qualitative & Quantitative, program evaluation	2003–2005, South Africa	44 Kudu SG Members were compared to 23 non-members	Time to treatment failure was longer in patients participating in SGs (448 days vs. 337 days, P, 0.001). SGs were associated with better adherence (89% vs. 82%, P = 0.05) and risk of treatment failure was significantly reduced by SGs (HR = 0.43, P = 0.003), the impact being higher with the number of SG sessions attended (3 vs. 2, p=0.01p=0.01). Women were more likely than men to be retained (74% vs. 6%, p=0.027)	Poor	N/A	Weak	No data	Results from the quantitative component are limited by the	

Citation	Study Characteristics			Key Findings of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No;	Comments
	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Quality of Evidence (Strong, Medium, Weak)			
						Internal	External		
Kaaya, S. et al. 21	Unblinded RCT	10/2001 – 2/2004, Tanzania	331, randomized to SG (n=168) and control (n =163)	detectable viral load (AOR = 0.60, 95% CI [0.42–0.87]). After adjusting for duration on ART, age and CI	Fair	Fair	Strong	No data	Over 30% randomized to intervention did not initiate intervention or SOC. Intervention lasted only six weeks.

Citation	Study Characteristics		Key Findings (Magnitude of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No);	Comments	
	Study Design	Study Period, Country		Participants and outcomes	Validity (Good, Fair, or Poor)				Quality of Evidence (Strong, Medium, Weak)
					Internal	External			
Ndu, A, et al. ²⁵	Cross Sectional	6/2007 Nigeria	122 ART clinic attendees	Poor	Poor	Medium	No data	Causality between symptoms of anxiety and depression and their correlates could not be firmly established.	
Pappin M, et al. ²⁶	Cross Sectional	2007-08, S. Africa	716 starting ART at 12 public health facilities	Poor	Fair	Medium			
Retention in care									
Decroo, J, et al. ¹⁶	Observational Cohort Study	2/2008-5/2010, Mozambique	1384 CAG members, program data	Poor	Fair	Medium	No data		

Citation	Study Characteristics			Key Findings of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No;	Comments
	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Quality of Evidence of (Strong, Medium, Weak)			
						Internal	External		
Lamb MR, et al. ¹⁹	Cohort study	Jan 1, 2005–Sept 30, 2011	312,335 patients (10–24 yrs) at 160 HIV clinics: Kenya-41, Mozambique-31, Rwanda-41, Tanz-47	CHW, or participation in a SG at 12 months positively influenced patient retention at 24 months after starting ART; There was no association between Pre-ART attending clinics that offered adolescent SGs (Data not reported). ART: Youth attending clinics that offered adolescent SGs experienced lower attrition after ART initiation than youth attending clinics not offering these services (AHR=0.73, 95% CI: 0.52–1.0)	Good	Good	Medium	No data	
Muchedzi A et al. ²⁷	Cross-sectional	6–8,2008 Zimbabwe	147 PMTCT clients were interviewed and included in the survey.	Women enrolled in a SG were twice as likely to	Poor	Poor	Medium	No data	Assessed factors associated with

Citation	Study Characteristics			Key Findings (Magnitude of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No);	Comments
	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Quality of Evidence (Strong, Medium, Weak)			
						Internal	External		
Mundell JP, et al. ²²	Quasi-experimental	4/2005 – 9/2006, S. Africa	361 pregnant women, (144 participated in the 10-session weekly psychosocial SG [intervention] and 217 who declined (control)	Poor	Poor	Medium	No data		

Citation	Study Characteristics		Key Findings (Magnitude of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No);	Comments	
	Study Design	Study Period, Country		Participants and outcomes	Validity (Good, Fair, or Poor)	Quality of Evidence (Strong, Medium, Weak)			
						Internal			External
HIV Transmission									
Gaede B, et al. ³⁵	Descriptive cross sectional	Year not specified, S. Africa	262 HIV positive pregnant and non-pregnant women (165 urban and 97 rural)	The findings supported positive benefits of counseling and SGs among women. Membership in a SG also showed a positive association with condom use (Spearman's correlation Coeff=0.394; p<0.001). The overall SG membership was only 12% (7% in urban and 21% in	Poor	Fair	Medium		

Citation	Study Characteristics			Key Findings of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No;	Comments				
	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Internal	External			Quality of Evidence (Strong, Medium, Weak)			
											Bateganya et al.		
											Internal	External	Quality of Evidence (Strong, Medium, Weak)
Hardon A, et al. ²⁰	Descriptive cross sectional	2008-09, Burkina Faso, Kenya, Malawi, Uganda	3659 for the quantitative component and 157 for the qualitative component	rural (p =0.001) rural (p =0.001)	N/A	N/A	Medium	Few HIV positive members answered open ended questions					
Skogma S, et al. ³⁶	Mixed (qualitative & quantitative)	9-12, 2003, South Africa	144 (118 women and 26 men) two HIV clinics in central Johannesburg	The disclosure rate was generally high (92%). No significant differences in disclosure between the patients with only pre- and post-test counseling vs. those attending professional counseling or SGs, and to those not attending any	Poor	Fair	Medium	In the setting, disclosure was high (92%). Sample size used in the study may have been too small					

Study Characteristics				Key Findings of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No;	Comments	
Citation	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Internal	External			Quality of Evidence (Strong, Medium, Weak)
Wouters E, et al. ³⁷	Prospective cohort/routine data	2004–2007, S. Africa	268 patients enrolled in the public sector ART.	form of counseling. form of counseling. g. Public disclosure at six-month follow-up was significantly associated with bonding social capital measures including support groups Participating in an HIV/AIDS SG group at 12 months and 24 months were associated with public disclosure. ($\beta=0.22$ and $\beta=0.22$ respectively).	See above	See above	See above	Potential confounders such as psychosocial and socio-behavioral factors were not available in the dataset and were not controlled for. We assumed for purposes of this review that disclosure and VL are associated with less transmission		
Gillet HJ, et al. ³⁰	Qualitative	5–6/2009, Kenya	21 HIV-positive women	Women gained confidence to disclose to relatives and partners after meeting other PLHIV in their SG. No data on impact of SG on disclosure to non-SG members	N/A	N/A	N/A	Did not investigate the impact of support groups on disclosure to people outside the SG		
Kim YM, et al. ³¹	Qualitative	2007–2008, Uganda	113 key informants, 16 FGDs (11 with SG members & 5 with non-SG community members).	NSAs trained from the SGs contributed to an increase in the disclosure of HIV-positive status to spouses, family	N/A	N/A	N/A	Disclosure to family members has prevention benefits within discordant couples		

Study Characteristics				Key Findings of effect (HR, OR, RR, RD & 95% CI) or other description)	Quality of evidence for individual studies			Evidence from Economic Evaluation (Yes or No;	Comments	
Citation	Study Design	Study Period, Country	Participants and outcomes		Validity (Good, Fair, or Poor)	Internal	External			Quality of Evidence (Strong, Medium, Weak)
Kaaya, S, et al. ²¹	Unblinded RCT	10/2001 – 2/2004, Tanzania	331, randomized to SG (n=168) and control (n=163)	members, PLHIV group members, service providers, and community members. PLHIV group members, service providers, and community members. PLHIV group members, service providers, and community members. PLHIV group members, service providers, and community members. PLHIV group members, service providers, and community members. PLHIV group members, service providers, and community members.	Fair	Fair	Strong	No data	Bateganya et al. Intervention lasted only six weeks.	

* Level of Evidence; **Strong** (Systematic Review/meta-analysis of RCTs with consistent findings; High-quality individual RCT), **Medium** (Systematic Review/meta-analysis of lower-quality clinical trials or of studies with inconsistent findings; Lower-quality clinical trial; Cohort study; Case control study or **Weak** (Consensus guidelines; Usual practice; Opinion; Case series) Abbreviations: SG, Support Groups; VL, Viral load; CHWs, Community Healthcare Workers; FGD, Focus Group Discussion

Table 2

Summary of evidence from all studies by outcome

Outcomes	Overall Quality of Evidence		Impact of the intervention	Evidence from Economic Evaluation		Comments
	Number of Studies	Overall Quality of the Body of Evidence (<i>Good, Fair, Poor</i>)		Number of studies	Quality of evidence from economic evaluation	
Mortality	1 [17]	Fair	Moderate	None	N/A	Some support group characteristics described in the S. Africa settings do provide some important lessons.
Morbidity	7 [15, 18, 21, 23–26]	Fair	High	None	N/A	Almost all studies were cross sectional or qualitative and only demonstrate associations. Different outcomes for morbidity were used in the different studies
Retention in Care	5 [15–17, 19, 27]	Fair	High	None	N/A	Results from several large cohorts demonstrate sustained retention especially in ART patients
Quality of Life	7 [18, 22, 30–34,]	Poor	Moderate	None	N/A	As reported, the studies all used different measures of quality of life. All reported outcomes would have an impact on quality of life for PLHIV directly or indirectly
HIV Transmission	7 [20, 21, 30, 31, 35, 36, 37]	Poor	Uncertain	None	N/A	Three of the four studies were conducted in S. Africa, with mixed results. One study conducted elsewhere had mixed results and involved non-representative sample of participants from each country.

i The expected impact of the intervention was rated as: **High**=Intervention expected to have a high impact on the outcome, **Moderate**=Likely to have a moderate impact on the outcome, **Low**=Intervention expected to have a low impact on the outcome and, **Uncertain**=Available information is not adequate to assess estimated impact on the outcome.

Note, assessment of the **expected impact** of the intervention was based on published evidence. Additional considerations that would inform implementation decisions would have to take into account the cost effectiveness information and country specific contextual considerations.