Lay health worker attrition: important but often ignored

Lungiswa Nkonki,[a] Julie Cliff[b] & David Sanders[c]

Abstract Lay health workers are key to achieving universal health-care coverage, therefore measuring worker attrition and identifying its determinants should be an integral part of any lay health worker programme. Both published and unpublished research on lay health workers has largely focused on the types of interventions they can deliver effectively. This is an imperative since the main objective of these programmes is to improve health outcomes. However, high attrition rates can undermine the effectiveness of these programmes. There is a lack of research on lay health worker attrition. Research that aims to answer the following three key questions would help address this knowledge gap: what is the magnitude of attrition in programmes? What are the determinants of attrition? What are the most successful ways of reducing attrition? With community-based interventions and task shifting high on the United Nations Millennium Development Goals' policy agenda, research on lay health worker attrition and its determinants requires urgent attention.

Abstracts in عربي, 中文, Français, Русский and Español at the end of each article.

Introduction

A community or lay health worker is a member of the community who has received some training to promote health or to carry out some health-care services, but is not a health-care professional. Community or lay health worker programmes were promoted in many countries in the 1970s and 1980s, but many were abandoned as they failed to realize the potential demonstrated in several initiatives led by nongovernmental organizations and in national programmes such as China's "barefoot doctors." With recent evidence of their effectiveness, and in the context of the health workforce crisis, interest in lay health workers has increased and many countries are again investing in national programmes.[1,2] However, sustainability of these programmes is threatened by high rates of attrition.

Measuring attrition and identifying its determinants should be an integral part of managing any lay health worker programme, but it is often ignored in favour of reporting health outcomes and process indicators such as the number of workers recruited and trained. The emphasis on reporting health outcomes is appropriate, since the main purpose of lay health worker programmes is to bring health services closer to communities so as to improve health outcomes. Thus, evidence on improvement of health outcomes is necessary to justify the introduction or continued use of lay health workers in any context. However, attrition that leads to disruption in the continuity of care and retraining costs can undermine the ultimate goal of these programmes.

Searches of key databases and interrogation of published reviews of lay health worker programmes find that high turnover is widely recognized as a challenge. Several researchers acknowledge this as an area that requires further research but this recognition has not translated into empirical research on this topic.[3–5]

Contribution to health

Several reviews have reported that lay health workers carry out a variety of health tasks and are referred to using about 60 different names around the world.[1,2,6–9] Lay health workers deliver a wide range of interventions in such areas as nutrition, maternal and child health, primary health care, malaria, tuberculosis and HIV/AIDS prevention and control, mental health and non-communicable diseases. A review of randomized controlled trials found that these workers can be effective in increasing immunization coverage, improving breastfeeding rates, reducing infant mortality and improving tuberculosis treatment.[9] They contribute to the prevention and management of communicable and noncommunicable diseases, and maternal and child health.

It is difficult to state the number of lay health workers worldwide, because many programmes exist as small-scale projects. Furthermore, as pointed out by Lehmann and Sanders,[1] when they are not owned and firmly embedded in communities, the programmes are vulnerable. They often exist on the physical and organizational periphery of health systems and thus may be fragile and unsustainable. Nonetheless, some countries have implemented national programmes (Table 1).

Lack of data

There are very few published studies on lay health worker attrition, particularly quantitative studies with a primary outcome of attrition or retention. We found 11 reviews that summarize the evidence on various subtopics of lay health worker programmes, including attrition or retention.[1,2,5–12]However, most published peer-reviewed studies are largely of lessons learnt from evaluations of lay health worker programmes.[13–18] We found only one quantitative study that had "attrition" as a primary outcome.[17]

Attrition

Attrition has been identified as one of the key challenges of lay health worker programmes.[8] Attrition levels were reported between 3.2% and 77% in the 1980s.[11,18] The problem persists in current programmes: a lay health worker programme in the Plurinational State of Bolivia noted a 43% attrition rate,[19] in

[a] Health Systems Research Unit, South African Medical Research Council, PO Box 19070, Tygerberg, 7505, South Africa.
[b] Faculdade de Medicina, Universidade Eduardo Mondlane, Maputo, Mozambique.
[c] School of Public Health, University of the Western Cape, South Africa.
Correspondence to Lungiswa Nkonki (e-mail: lungiswa.nkonki@mrc.ac.za).
(*Submitted: 28 February 2011 – Revised version received: 15 August 2011 – Accepted: 23 August 2011 – Published online: 24 October 2011*)

Table 1. **National programmes for lay health workers**[2]

Country	Programme	Year initiated	Number of lay health workers trained
Bangladesh	Bangladesh Rural Advancement Committee – Community Health Worker Programme	1977	78 000
Thailand	Village Health Volunteer Programme	1970	80 000
Brazil	Program Saude da Familia	1994	240 000
Haiti	Projeveye santé (Zanmi Lasantes Community Health Programme)	1985	> 1 600
Ethiopia	Health Extension Programme	2004	30 190
Mozambique	Agentes Polivalentes Elementares Programme	1978	< 1 000
Pakistan	Lady Health Worker Programme	1994	92 957

South Africa a tuberculosis intervention programme lost 11 out of 12 lay health workers in less than a year[20] and, in Bangladesh, implementation of an intervention aimed at improving newborn care lost 32 out of 43 lay health workers over a four-year period.[21] In stark contrast to these high attrition rates stands the experience of the Female Community Health Volunteer programme in Nepal: the scheme has existed for more than 20 years and has had less than 5% annual attrition.[13] Yet, even in this context of low attrition, there are variations between districts, with seven districts reporting turnover rates of 40–55%.[22] Clearly lay health worker attrition is a common problem in interventions in various settings.

The following factors are highlighted as reasons for attrition: inadequate[7,8,23] and irregular pay,[17] lack of family support,[7,17,23] age,[17] upgrading of health posts,[7,17] lack of time,[23] lack of profit,[23] poor selection,[7] better employment positions in other fields,[7] and loss of other economic opportunities. It is evident that lay health worker attrition is influenced by many factors. Lehmann & Sanders argue that attrition should be addressed as part of a broader package of management interventions.[24] In this light, the United States Agency for International Development developed a functionality assessment tool with 12 components that contribute to an effective lay health worker programme.[25] They include: recruitment, worker's role, initial and on-going training, equipment and supplies, supervision, performance evaluation, incentives, community involvement, referral, professional advancement and documentation (which includes information management). Surprisingly, information management does not include documenting attrition, despite it being an indicator of programme functionality.

Attrition is not only a challenge for lay health workers but affects other health workers to varying degrees. For instance, South Africa and Uganda lost 41% and 78% of their pharmacists working in the public sector between the years 1998–2002.[26] Nurse attrition was much lower at 11%, 12% and 7% in Senegal, South Africa and Zimbabwe respectively.[26]

Challenges measuring attrition

It is important to acknowledge that the lack of research on attrition is not only due to the focus on health outcomes. It is hard to define and report lay health worker attrition. One of the main challenges is the informality of this work; with some working part-time and/or as volunteers. Haines et al.[5] found that early studies imply that volunteers are ideal, although most programmes pay their community workers either a salary or an honorarium. Lay health workers may combine their health-care roles with other activities such as agricultural activities. Economic activity varies throughout the year in agricultural societies. During the slack season, people often seek casual work in urban areas.[27] In the peak seasons, an increased number of field labourers and working hours are needed.[28,29] The sometimes informal nature of lay health worker work makes it difficult to measure attrition as workers may prioritize working in the field during peak periods. Hence it may be difficult to ascertain whether the health worker is not at work due to agricultural demands or because they have left the programme.

The limited studies that report attrition tend to report it inadequately, as total attrition either by number or rate. In programmes where lay health workers are paid, these data are often collected from pay records, which only indicate when people are no longer on the payroll or have dropped out. Consequently, it is not possible to distinguish between different types of attrition such as resignations, relocation and termination. This limits appropriate responses to the problem.

This inability to distinguish between different types of attrition signals an even bigger information problem. In 2001, a review of incentives to motivate and retain lay health workers raised the following questions: (i) what are current attrition rates in programmes? (ii) do these differ depending on the type of programme? (iii) what are realistic attrition rates? (iv) what are the costs of attrition? and (v) how can attrition be reduced successfully?[8] Most evaluations of lay health worker programmes cannot answer these questions. A case in point is the Lady Health Workers National Programme for Family Planning and Primary Health care (NPFPPHC) in Pakistan. This programme was initiated in 1994 and has nearly 93 000 female community health workers. Burn[30] set out to evaluate the reasons for resignations in the programme. The first hurdle was that recent annual attrition rates were unknown to the programme managers. The only available data were from an external evaluation, which estimated a 5% attrition rate in 2002. One of Burn's objectives was to determine attrition rates of the NPFPPHC in Rawalpindi district. Similar to the national programme, the district and provincial health offices had no annual figures for attrition. Burn therefore reviewed monthly reports and annual records to gain an understanding of the magnitude of attrition in this context. These data were of questionable quality; monthly data showed that 439 lady health workers had left the programme between 1996 and 2008, whereas the annual data showed that 426 lady health workers had left in just five years.

The problem of unknown attrition rates is not unique to the Lady Health Worker Programme in Pakistan. In

South Africa, provincial governments have contractual relationships with 1636 non-profit organizations employing around 38 500 community caregivers.[31] Lay health worker attrition is often mentioned as a challenge in these programmes but its magnitude remains unknown.

Future directions

The current move towards larger and formal programmes[5] presents an opportunity for incorporating attrition measurement into monitoring and evaluation frameworks. This may be easier than for informal and part-time programmes.

Several approaches can be used to improve knowledge on attrition. The first priority should be to address the questions raised in a 2001 review by Bhattacharyya et al.[8] The first four questions are important for managers or programme planners, particularly for existing lay health worker programmes. They are aimed at assessing the magnitude of the problem of attrition.

The next priority should be to try to differentiate between the different types of attrition (i.e. resignations, relocation and termination) and their causes. For existing programmes with paid workers, retrospective record reviews of payrolls will be an important, but not necessarily complete, source of information. Programmes, whether they have financial and nonfinancial incentives, should implement exit interviews of each worker who formally leaves the programme. Interviews should capture reasons for leaving, the duration of employment and the worker's future plans.

The financial costs of attrition vary depending on the context and magnitude. These costs include retraining and recruitment but the most important cost is in the disruption of continuity of care. Moreover, the remaining workers may be affected negatively by low staff morale, as they may have to take on additional work while waiting for replacement staff.

If there is high attrition, then the next two levels of inquiry should be: (i) what are the determinants of attrition? and (ii) what are the most effective strategies for reducing attrition? Several important factors have been identified including: supportive supervision, defined roles with specific tasks, locally relevant incentives, incentive systems combining monetary and nonmonetary benefits, recognition, training opportunities, community and policy support, and strong leadership.[1,32]

The World Health Organization recommends that community health workers receive adequate wages and/or other appropriate and commensurate incentives.[33,34] It has been argued though that this recommendation is based on opinion and not on empirical evidence on the relationship between wages and attrition.[13]

Incentives provided to lay health workers in the health sector may be competing with incentives in other labour markets. Failure to take into account a dynamic labour market when designing incentives has also been observed among other types of health workers.[35] Age, marital status and educational attainment are all important factors to consider when reviewing incentives. During high unemployment, lay health worker roles may be attractive to younger people as they offer an opportunity for training and work experience. However, if they are not interested in a career path within the health sector, their decision to stay will be largely influenced by opportunities in the broader labour market. In contrast, older women with lower educational levels may be interested in part-time community work and be more responsive to incentives within the health sector. In agricultural settings, lay health worker incentives may compete with small-scale farming income.

Selection criteria for entry into a lay health worker programme determine the profile of the workers it employs. Once they are part of the programme, factors such as training, workload, support in the working environment and appropriate incentives all affect the workers' performance. Furthermore, these factors will determine how long they are prepared to perform their tasks, i.e. whether they choose to stay or leave the programme. However, the effect of different approaches to training, supervision and incentives on attrition rates is unknown. Randomized controlled trials which have retention or attrition as the primary outcome would be ideal to address these questions. However, this kind of research is expensive and not always feasible. An alternative approach would be to measure the duration of lay health worker employment before exit (i.e. a survival analysis). This type of analysis could either be done prospectively or retrospectively. Survival analysis is common in the medical field. It is also used in labour economics, for instance to measure the duration of unemployment experienced by an individual. It can yield important insights into the relationship between duration of employment of workers and training, working conditions and incentives.

Conclusion

This paper argues that measuring lay health worker attrition has not been considered as an important process indicator nor as an area of research that could strengthen lay health worker programmes. This is evidenced by the fact that questions raised in 2001 remain unanswered today. Given that community-based interventions and task shifting are now high on the United Nations Millennium Development Goals' policy agenda, research on lay health worker attrition, its determinants and possible solutions requires urgent attention. ■

Acknowledgements

Lungiswa Nkonki is also affiliated with the Centre for International Health, University of Bergen, Norway, and Health Systems Research, Division of Community Health, Stellenbosch University , South Africa. She acknowledges support from the Emerging Voices for Global Health venture at the Institute of Tropical Medicine, Antwerp, Belgium.

Competing interests: None declared.

ملخص

استنزاف العاملين الصحيين غير المحترفين: أمر هام غالباً ما يجري إهماله

للعاملين الصحيين غير المحترفين دور رئيسي في تحقيق التغطية الشاملة للرعاية الصحية، لذا يتعين أن يكون قياس استنزاف هؤلاء العاملين واستكشاف محددات ذلك جزءاً مكملاً لأي برنامج للعاملين الصحيين غير المحترفين. وقد ركزت كل من البحوث

المنشورة وغير المنشورة حول العاملين الصحيين بدرجة كبيرة على أنواع التدخلات التي يمكنهم تقديمها بفعالية. هذه ضرورة حيث أن الغرض الرئيسي لهذه البرامج هو تحسين مستوى النتائج الصحية. إلا أن معدل استنزاف العاملين المرتفع يمكن أن يقوّض فعالية تلك البرامج. وهناك نقص في البحوث حول استنزاف العاملين الصحيين غير المحترفين. والبحوث التي تهدف إلى الإجابة على الأسئلة الثلاثة الأساسية التالية ستساعد في رأب هذه الفجوة المعرفية: ما هو مقدار تأثير هذا الاستنزاف على البرامج؟ ما هي محددات هذا الاستنزاف؟ ما هي أكثر الطرق نجاحاً في الحد من هذا الاستنزاف؟ ونظراً للتدخلات المجتمعية المرتكز وعلو مرتبة المهام الموجودة على جدول أعمال السياسات بخصوص المرامي الإنمائية للألفية، يتعين الاعتناء على الفور بالبحوث المتعلقة بالعاملين الصحيين غير المحترفين والمحددات التي تؤثر فيهم.

摘要

非专业卫生工作者自然缩减:重要但往往被忽略

非专业卫生工作者是实现全民医疗覆盖的一个关键,因此衡量其自然缩减并确定其决定因素应该是任何非专业卫生工作者计划的组成部分。发表的和未发表的非专业卫生工作者研究主要集中在他们能够有效提供的干预措施的类型。这是必要的,因为这些计划的主要目标是改善健康状况。然而,高自然缩减率会破坏这些计划的有效性。鉴于缺乏非专业卫生工作者自然缩减方面的研究,旨在回答下述三个关键问题的研究将有助于解决这一知识缺口:这些计划中自然缩减的程度如何?自然缩减的决定因素是什么?减少自然缩减的最成功的方法是什么?随着以社区为基础的干预措施和重新分工成为“联合国千年发展目标”政策议程的重要议题,有关非专业卫生工作者自然缩减和其决定因素的研究急需关注。

Résumé

Attrition du personnel non médical: importante, mais souvent ignorée

Le personnel non médical est essentiel dans l'obtention d'une couverture sanitaire universelle. Par conséquent, mesurer l'attrition du personnel et identifier ses déterminants devrait faire partie intégrante de tout programme impliquant un personnel non médical. Aussi bien les recherches publiées que celles non publiées sur le personnel non médical se sont amplement concentrées sur les types d'intervention qu'il peut réaliser avec succès. Il s'agit ici d'un impératif dans le sens où ces programmes ont pour objectif premier d'améliorer les effets sur la santé. Cependant, des taux d'attrition élevés peuvent compromettre l'efficacité de ces programmes. Les recherches sur l'attrition du personnel non médical manquent. Des recherches qui viseraient à répondre aux trois questions principales ci-après contribueraient à réduire ce déficit en connaissances: Quelle est l'ampleur de cette attrition dans les programmes? Quels sont les déterminants de l'attrition? Quels sont les moyens les plus efficaces pour ralentir l'attrition? Alors que les interventions communautaires et la délégation des tâches figurent en tête de liste de l'ordre du jour des Nations Unies pour les objectifs du Millénaire pour le développement, les recherches sur l'attrition du personnel non médical et sur ses déterminants exigent une attention immédiate.

Резюме

Убыль медицинского персонала, не имеющего специального образования: важная, но зачастую игнорируемая проблема

Привлечение к оказанию медицинских услуг лиц, не имеющих специального медицинского образования, является ключом к обеспечению всеобщего охвата населения медико-санитарной помощью. Вот почему измерение убыли работников и определение ее факторов должны быть неотъемлемой частью любой программы оказания медицинской помощи силами лиц, не имеющих специального образования. Как опубликованные, так и неопубликованные исследования, посвященные использованию труда лиц, не имеющих специального медицинского образования, в значительной степени фокусируются на видах интервенций, которые такие работники способны эффективно осуществлять. Это необходимо, поскольку основная цель таких программ – улучшение долгосрочных результатов в отношении здоровья. Однако высокий процент убыли персонала может поставить под сомнение эффективность этих программ. Исследований, посвященных убыли медработников, не имеющих специального образования, мало. Помочь заполнить этот пробел в знаниях могли бы исследования, стремящиеся ответить на следующие три вопроса: каковы масштабы убыли персонала в программах? Какие факторы определяют убыль? Каковы наиболее успешные способы снижения убыли? Учитывая, что проведению мер вмешательства на уровне общин и распределению задач отводится важное место в политической повестке дня Целей ООН в области развития, сформулированных в Декларации тысячелетия, исследования, посвященные убыли медицинского персонала, не имеющего специального образования, и ее причинам, требуют неотложного внимания.

Resumen

Rotación del personal sanitario no cualificado: una cuestión importante, aunque frecuentemente ignorada

El personal sanitario no cualificado es fundamental en la consecución de una cobertura sanitaria universal. Por este motivo, la medición de la rotación de estos trabajadores, así como la identificación de sus determinantes, deberían formar parte de cualquier programa sobre personal sanitario no cualificado. Las investigaciones, ya estén publicadas o no, sobre personal sanitario no cualificado, se suelen centrar en los

tipos de intervenciones que pueden llevar a cabo de manera efectiva. Esto resulta vital, ya que el objetivo principal de estos programas es mejorar los resultados sanitarios. No obstante, unas tasas de rotación elevadas pueden minar la eficacia de dichos programas. Existen grandes carencias en la investigación sobre la rotación del trabajador sanitario no cualificado. Esta laguna de conocimiento quedaría en parte solventada a través de una investigación dirigida a responder a estas tres preguntas: ¿Cuál es la magnitud de la rotación en los programas? ¿Qué factores determinan dicha rotación? ¿Cuáles son las formas más eficaces para reducir la rotación? La investigación sobre la rotación del personal sanitario no cualificado y sus factores determinantes requiere atención urgente, con intervenciones basadas en la comunidad y tareas que cambien la prioridad a «alta» en la agenda de política de los «Objetivos de Desarrollo del Milenio de las Naciones Unidas».

References

1. Lehmann U, Sanders D. *Community health workers: what do we know about them? The state of the evidence on programmes, activities, costs and impact on health outcomes of using community health workers.* Geneva: World Health Organization; 2007.
2. Bhutta ZA, Lassi ZS, Pariyo G, Huicho L. *Global experience of community health workers for delivery of health-related Millennium Development Goals: a systematic review, country case studies and recommendations for scaling up*. Geneva: World Health Organization; 2010.
3. Lewin S, Dick J, Pond P, Zwarenstein M, Aja G, van Wyk B et al. Lay health workers in primary and community health care. *Cochrane Database Syst Rev* 2005. 11–108.
4. Morrow RH. Commentary: lay health workers in primary and community health care. *Int J Epidemiol* 2005;34:1252–, discussion 1252. PMID:16416514
5. Haines A, Sanders D, Lehmann U, Rowe AK, Lawn JE, Jan S et al. Achieving child survival goals: potential contribution of community health workers. *Lancet* 2007;369:2121–31. doi:10.1016/S0140-6736(07)60325-0 PMID:17586307
6. Gilson L, Walt G, Heggenhougen K, Owuor-Omondi L, Perera M, Ross D et al. National community health worker programs: how can they be strengthened? *J Public Health Policy* 1989;10:518–32. doi:10.2307/3342522 PMID:2621254
7. Ofosu-Amaah V. *National experience in the use of community health workers:a review of current issues and problems.* Geneva: World Health Organization; 1983.
8. Bhattacharyya K, Winch P, LeBan K, Tien M. *Community Health Worker Incentives and Disincentives: How They Affect Motivation, Retention, and Sustainability*. Arlington: United States Agency for International Development; 2001.
9. Lewin S, Munabi-Babigumira S, Glenton C, Daniels K, Bosch-Capblanch X, van Wyk B et al. Lay Health Workers in primary and community healthcare for maternal and child health and the management of infectious disease. *Cochrane Database Syst Rev* 2010. 31–209.
10. Gilroy K, Winch P. *Management of sick children by community health workers.* Geneva: World Health Organization; 2006.
11. Parlato M, Favin M. *Primary health care. Progress and problems: an analysis of 52 AID-assisted projects Washington*: American Public Health Association; 1982.
12. Walt G. *Community health workers in national programmes. Just another pair of hands?* Milton Keynes: Open University Press; 1992.
13. Glenton C, Scheel IB, Pradhan S, Lewin S, Hodgins S, Shrestha V. The female community health volunteer programme in Nepal: decision makers' perceptions of volunteerism, payment and other incentives. *Soc Sci Med* 2010;70:1920–7. doi:10.1016/j.socscimed.2010.02.034 PMID:20382464
14. Landon B, Loudon J, Selle M, Doucette S. Factors influencing the retention and attrition of community health aides/practitioners in Alaska. *J Rural Health* 2004;20:221–30. doi:10.1111/j.1748-0361.2004.tb00032.x PMID:15298096
15. Sivaram S, Celentano DD. Training outreach workers for AIDS prevention in rural India: is it sustainable? *Health Policy Plan* 2003;18:411–20. doi:10.1093/heapol/czg049 PMID:14654517
16. Ewoigbokhan SE, Brieger Ches WR. Village Health Worker Attrition and Function Levels in the ILE-IFE Area of Nigeria *Int Q Community Health Educ* 1993;14:323–36. doi:10.2190/9CGD-5Q5X-1LGU-7VQJ
17. Chevalier C, Lapo A, O'Brien J, Wierzba TF. Why do village health workers drop out? *World Health Forum* 1993;14:258–61. PMID:8397731
18. Walt G, Perera M, Heggenhougen K. Are large-scale volunteer community health worker programmes feasible? The case of Sri Lanka. *Soc Sci Med* 1989;29:599–608. doi:10.1016/0277-9536(89)90179-2 PMID:2799410
19. Tenerio A, Saunero R, Sinani J, Lafuente L, Gutierrez F. *Extending the duration of exclusive breastfeeding in El Alto, Bolvia through a community-based approach and the provision of health services.* Dhaka: Child Health and Nutrition Research Initiative (CHNRI); 2009.
20. Atkins S, Lewin S. Jordaan E. *Enhanced tuberculosis adherence programme.* Cape Town: Cape Town Medical Research Council; 2009.
21. Rahman SM, Ali NA, Jennings L, Seraji MH, Mannan I, Shah R et al. Factors affecting recruitment and retention of community health workers in a newborn care intervention in Bangladesh. *Hum Resour Health* 2010;8:12. doi:10.1186/1478-4491-8-12 PMID:20438642
22. New Era. *An analytical report on national survey of female community health volunteers of Nepal*. Kathmandu: United States Agency for International Development; 2007.
23. Khan SH, Chowdhury AM, Karim F, Barua MK. Training and retaining Shasthyo Shebika: reasons for turnover of community health workers in Bangladesh. *Health Care Superv* 1998;17:37–47. PMID:10182173
24. Lehmann U, Sanders D. *Community health workers: What do we know about them? The state of the evidence on programme activities, costs and impact on health outcomes of using community health workers.* Cape Town: University of the Western Cape; 2007.
25. Crigler L, Hill K. *Rapid assessment of community health worker programs in USAID priority MCH countries.* Washington: United States Agency for International Development; 2009.
26. Awases M, Gbary A, Nyoni J, Chatora R. *Migration of health professionals in six countries: synthesis report*. Brazzaville: World Health Organisation Regional office for Africa; 2004.
27. Ding S, Wu H, Chen Y. *Seasonal dimensions of household wellbeing and labour migration in rural Hubei, China*. Brighton: Institute of Development Studies; 2009.
28. Chambers R, Longhurst R, Pacey A. *Seasonal dimensions to rural poverty*. London: Frances Pinter; 1981.
29. Devereux S. *Seasonality and social protection in Africa: growth and social protection working paper 07*. Brighton: Institute of Development Studies; 2009.
30. Burn H.*An insight into the resons why Lady Health Workers resign from Pakistan's National Programme for Family Planning and Primary Health Care*. Leeds: University of Leeds; 2008.
31. Lehman U, Matwa P, Schneider H, Colvin C. *A map of community caregiver programme practices in provincial health departments. Report to the health systems sub-committee of the South African National AIDS Council (SANAC).* Pretoria: South African National AIDS Council (SANAC)*;* 2009.
32. Hermann K, Van Damme W, Pariyo GW, Schouten E, Assefa Y, Cirera A et al. Community health workers for ART in sub-Saharan Africa: learning from experience–capitalizing on new opportunities. *Hum Resour Health* 2009;7:31. doi:10.1186/1478-4491-7-31 PMID:19358701
33. *Scaling up, saving lives.* Geneva: World Health Organization; 2008.
34. *Task shifting: rational redistribution of tasks among health workforce teams.* Geneva: World Health Organization; 2007.
35. Vujicic M, Zurn P. The dynamics of the health labour market. *Int J Health Plann Manage* 2006;21:101–15. doi:10.1002/hpm.834 PMID:16846103