Integrated morbidity management for lymphatic filariasis and podoconiosis, Ethiopia

Article (Published Version)


This version is available from Sussex Research Online: http://sro.sussex.ac.uk/id/eprint/69211/

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher’s version. Please see the URL above for details on accessing the published version.

Copyright and reuse:
Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

http://sro.sussex.ac.uk
Integrated morbidity management for lymphatic filariasis and podoconiosis, Ethiopia

Kebede Deribe,a Biruck Kebede,b Mossie Tamiru,b Belete Mengistu,c Fikreab Kebede,c Sarah Martindale,d Heven Sime,e Abate Mulugeta,f Biruk Kebede,g Mesfin Sileshi,h Asrat Mengiste,g Scott McPhersonc & Amha Fentayeib

**Problem** Lymphatic filariasis and podoconiosis are the major causes of tropical lymphoedema in Ethiopia. The diseases require a similar provision of care, but until recently the Ethiopian health system did not integrate the morbidity management.

**Approach** To establish health-care services for integrated lymphoedema morbidity management, the health ministry and partners used existing governmental structures. Integrated disease mapping was done in 659 out of the 817 districts, to identify endemic districts. To inform resource allocation, trained health extension workers carried out integrated disease burden assessments in 56 districts with a high clinical burden. To ensure standard provision of care, the health ministry developed an integrated lymphatic filariasis and podoconiosis morbidity management guideline, containing a treatment algorithm and a defined package of care. Experienced professionals on lymphoedema management trained government-employed health workers on integrated morbidity management. To monitor the integration, an indicator on the number of lymphoedema-treated patients was included in the national health management information system.

**Local setting** In 2014, only 24% (87) of the 363 health facilities surveyed provided lymphatic filariasis services, while 12% (44) provided podoconiosis services.

**Relevant changes** To date, 542 health workers from 53 health centres in 24 districts have been trained on integrated morbidity management. Between July 2013 and June 2016, the national health management information system has recorded 46487 treated patients from 189 districts.

**Lessons learnt** In Ethiopia, an integrated approach for lymphatic filariasis and podoconiosis morbidity management was feasible. The processes used could be applicable in other settings where these diseases are co-endemic.

---

**Introduction**

Lymphatic filariasis and podoconiosis are major causes of lymphoedema in tropical areas. Lymphatic filariasis is a mosquito-borne parasitic infection, while podoconiosis is an inflammatory disease caused by prolonged contact with irritant soil minerals. However, both diseases require a similar provision of care.

People with lymphoedema caused by lymphatic filariasis need access to care throughout their lives and the World Health Organization (WHO) has suggested a minimum package of care for managing morbidity and preventing disability. The package includes: providing antifilarial medicine, either through mass drug administration or individual treatment; hydrocele surgery; preventing and treating episodes of adenolymphangitis; and managing the lymphoedema.

Podoconiosis causes lymphoedema of the lower limb and acute pain. Early stages of the disease are reversible, but more advanced stages need lifelong treatment. The main prevention methods are use of footwear, regular foot hygiene and floor coverings, whereas already affected people receive management of their lymphoedema-related morbidity. The management includes daily foot hygiene using soap, water and antiseptics, emollients to restore skin function, elevation of the legs, exercise, use of socks and shoes, and if needed bandaging and removal of nodules.

Following the Global Programme to Eliminate Lymphatic Filariasis – which aims to eliminate lymphatic filariasis as a public health problem by 2020 – the Second edition of national neglected tropical diseases master plan of Ethiopia for 2016–2020 targets lymphatic filariasis and podoconiosis for elimination by 2020 and 2030, respectively.

The health ministry has taken an integrated approach for care provision, because it was not feasible to differentiate between the two diseases at primary health-care facilities and because of the similarity in health-care services provided.

Here we describe the implementation of the integrated approach into the Ethiopian health system.

**Local setting**

In Ethiopia, lymphatic filariasis is endemic in 70 districts, with over 5.6 million people at risk of acquiring the disease; whereas podoconiosis is endemic in 345 districts, with 34.9 million people at risk. Twenty-nine of these districts are co-endemic.

In 2014, 24% (87) of the 363 health facilities surveyed provided lymphatic filariasis services, while 12% (44) provided podoconiosis services. In the endemic districts, 42 nongovernmental partner-supported centres provide treatment for lymphatic filariasis and podoconiosis. These treatment centres have experienced staff members and act as training centres for

---

1 Wellcome Trust Brighton and Sussex Centre for Global Health Research, Brighton and Sussex Medical School, Falmer, Brighton, East Sussex, BN1 9PX, England.
4 Center for Neglected Tropical Diseases, Liverpool School of Tropical Medicine, Liverpool, England.
5 Ethiopian Public Health Institute, Addis Ababa, Ethiopia.
Correspondence to Kebede Deribe (email: kebededeka@yahoo.com).
Submitted: 9 December 2016 – Revised version received: 22 May 2017 – Accepted: 26 May 2017 – Published online: 26 June 2017
health workers on lymphoedema morbidity management.

**Approach**

**Mapping and burden assessment**

In 2013, the mapping teams for the two diseases joined together to co-map the disease distribution in 659 of Ethiopia’s 817 districts. Details on the integrated mapping are described elsewhere. To estimate the allocation of resources needed for morbidity management and disability prevention, implementing partners carried out a burden assessment to know the exact number of people with lymphoedema and/or hydrocele in the endemic districts. In 2015, an integrated burden assessment pilot was carried out in 20 co-endemic districts to inform the development of a national burden assessment protocol at district-level in 2016. The protocol describes the standardized design and implementation procedure.

Before the assessment started, health professionals from the partner-supported treatment centres provided a one-day classroom training course for health extension workers at a central place in each district. The training entailed: how to identify people with lymphoedema and hydrocele by using pictures on different stages of each disease, signs and symptoms; how to treat and prevent lymphoedema; and how to use the patient’s questionnaire for the burden assessment. The participants received travel reimbursement.

The health extension workers informed the health development teams about the assessment, and they passed the information to the community by visiting each household. Subsequently, the health extension workers visited each household to identify people with lymphoedema or hydroceles. They provided information on morbidity management, self-care and where to seek care. If nobody was at home at the time of the visit, they left a message with neighbours that they would return by the end of the day or the next morning. They followed up twice and if nobody could be reached, they reported the household as absent. To assess if lymphoedema was correctly identified, health extension workers were instructed in selected districts to refer identified people for verification by health officers or nurses at central locations, usually health centres, on a specified day.

Between 2015 and 2016 the burden assessment identified 44,039 lymphoedema and 1,574 hydrocele cases in 56 districts. Twenty-five of these districts had cases of both lymphoedema and hydrocele.

**Joint technical working group**

The health ministry organizes technical working groups to provide evidence-based technical and implementation inputs to health programmes. The groups, which meet monthly, include health ministry staff, members of research institutes, implementing partners, international organizations and donors. To aid the implementation of the integrated approach and enable a transparent discussion, the ministry combined the lymphatic filariasis and podoconiosis technical working groups. The ministry also assigned a focal person for the two diseases, whose role is to plan, coordinate and oversee the implementation of the interventions. In addition, this person is responsible for organizing and leading the technical working group meetings.

**Guideline development**

To develop an integrated morbidity management and disability prevention guideline, which would facilitate streamlining the integrated morbidity management into the general health system, the health ministry hosted workshops with the joint technical working group in 2015. To identify the minimum health service package, the group, with support from experts in the field, reviewed national and global experiences on morbidity management. The new guideline contains a simple algorithm on clinical assessment, treatment and referral needs, and a defined care package. The package includes patient counselling and teaching of a self-care routine, foot hygiene, skin care with ointment or emollients, leg elevation and exercise, footwear, wound care and management of adenolympangitis and, if needed, bandaging for people with podoconiosis. Based on the severity of disease, health workers encourage newly diagnosed patients either to report to the clinic or be visited by a health worker in their homes once a month for the first three months. During follow-up visits, health workers monitor the lymphoedema progress, look for entry lesions, remind patients and their families of the defined package and the importance of prevention and early care, and provide patients with more treatment supplies.

After the initial three months, patients are followed up annually to address any issues related to morbidity management and to ensure compliance with the self-care routine.

**Implementation**

In the districts or nearby towns in adjacent districts, experienced professionals on lymphoedema management provide a three-day guideline course for government-employed health workers. The first two days contain lectures on neglected tropical diseases in general, details on the two diseases and morbidity management. On day three, the participants receive practical training on morbidity management. So far, 542 workers from 53 health centres in 24 districts have been trained. Based on supportive supervision reports performed by partners and health ministry staff, health workers are providing services according to the national guideline.

The health ministry, supported by partners, also developed and rolled out a teaching video for health workers on integrated morbidity management.

The implementation also requires some additional resources, such as pamphlets on the self-care routine, treatment supplies and custom-made shoes. Hence, the morbidity management services and training on self-care are being scaled up in a phased approach at health centres in the endemic districts.

**Monitoring and evaluation**

Since July 2013, the national health management information system has contained an indicator for the number of lymphoedema-treated patients, segregated by cause (if available), which enables monitoring and evaluation of the integrated approach. The indicator definition of lymphoedema is a chronic progressive swelling of one or more parts of the body due to accumulation of lymphatic fluid and the fluid is gradually replaced by fibrous tissue. Treated patients are those who have received training on self-care routines and returned for the three-month follow-up. Health workers record demographic information, including name, contact address, sex, age, age of onset of condition, clinical stage and presence of wounds/entry lesions for new patients. An information system focal person collects reports on the number of lymphoedema cases treated from the registers in each health centre and manually enters the information into
Lessons learnt

The implementation of integrated morbidity management for lymphatic filariasis and podoconiosis has worked well. However, some organizations and budgets focused only on one of the diseases, which limited the full implementation at regional, zonal and districts levels.

Several factors contributed to the successful implementation. First, the health centre staff was trained to convert the vertical programmes to an integrated programme. Second, the presence of health professionals experienced in lymphoedema management supported the implementation through training of health workers, though these experts were not available in all endemic districts. Third, the existing treatment centres served as practical demonstration sites. Finally, committed partners supported the implementation of the integrated approach technically and financially (Box 1).

The integrated approach during the mapping and burden assessments reduced cost in comparison to the disease-specific approach. According to the planning budgets covering 659 districts, the estimated cost of lymphatic filariasis mapping was $1,212,209 United States dollars (US$), while the budget for podoconiosis mapping was estimated at $1,211,664, compared to the actual cost of the dual mapping of US$ 1,291,400. Team training, one diagnostic test for both diseases, supplies and travel contributed to most of the savings. By integrating the two diseases in the burden assessment, the need for a diagnostic disease-specific test was unnecessary, which reduced staff time and cost. Furthermore, having a single indicator has eased advocacy for the inclusion of the indicator into the information system, leading to regular and sustainable data collection. Finally, the development of a guideline brought partners and experts together to discuss experiences and resolve implementation differences, such as the use of bandaging and surgical removal of nodules for podoconiosis cases. The experts agreed that most aspects of lymphoedema management can be integrated, while maintaining disease-specific parts. This process helped to capitalize on national experience while also learning from global experiences.

The lessons learnt in Ethiopia could be used by other co-endemic countries, such as Brazil, India and the United Republic of Tanzania, wishing to implement an integrated morbidity management approach. In the future, the approach could include other neglected tropical diseases causing similar morbidities, such as leprosy and Buruli ulcer.

Lessons from the field

The implementation of integrated morbidity management for lymphatic filariasis and podoconiosis has worked well. However, some organizations and budgets focused only on one of the diseases, which limited the full implementation at regional, zonal and districts levels.

Several factors contributed to the successful implementation. First, the health centre staff was trained to convert the vertical programmes to an integrated programme. Second, the presence of health professionals experienced in lymphoedema management supported the implementation through training of health workers, though these experts were not available in all endemic districts. Third, the existing treatment centres served as practical demonstration sites. Finally, committed partners supported the implementation of the integrated approach technically and financially (Box 1).

The integrated approach during the mapping and burden assessments reduced cost in comparison to the disease-specific approach. According to the planning budgets covering 659 districts, the estimated cost of lymphatic filariasis mapping was $1,212,209 United States dollars (US$), while the budget for podoconiosis mapping was estimated at $1,211,664, compared to the actual cost of the dual mapping of US$ 1,291,400. Team training, one diagnostic test for both diseases, supplies and travel contributed to most of the savings. By integrating the two diseases in the burden assessment, the need for a diagnostic disease-specific test was unnecessary, which reduced staff time and cost. Furthermore, having a single indicator has eased advocacy for the inclusion of the indicator into the information system, leading to regular and sustainable data collection. Finally, the development of a guideline brought partners and experts together to discuss experiences and resolve implementation differences, such as the use of bandaging and surgical removal of nodules for podoconiosis cases. The experts agreed that most aspects of lymphoedema management can be integrated, while maintaining disease-specific parts. This process helped to capitalize on national experience while also learning from global experiences.

The lessons learnt in Ethiopia could be used by other co-endemic countries, such as Brazil, India and the United Republic of Tanzania, wishing to implement an integrated morbidity management approach. In the future, the approach could include other neglected tropical diseases causing similar morbidities, such as leprosy and Buruli ulcer.

Acknowledgements

We thank all the implementing partners. Namely WHO Ethiopia, the National Podoconiosis Action Network (NaPAN), Research Triangle Institute (RTI) International, the Centre for Neglected Tropical Diseases at the Liverpool School of Tropical Medicine (CNTD/LSTM) and the Ethiopian Public Health Institute. The main lymphatic filariasis programme implementing partners in Ethiopia include The Carter Center, RTI and CNTD/LSTM. Podoconiosis implementing partners include: the Action against Podoconiosis Association, the Ethiopian Catholic Secretariat Social and Development Commission, International Orthodox Christian Charities, and Mossy Foot International, coordinated by NaPAN.

Funding: Implementation was supported by the Ethiopian Federal Ministry of Health, WHO Ethiopia, the Wellcome Trust, CNTD/LSTM funded by the Department for International Development, The End Fund, NAPAN, the US Agency for International Development (USAID) ENVISION Project (under cooperative agreement number AID-OAA-A-11-00048) led by RTI International, the USAID MMDF Project (under cooperative agreement number AID-OAA-A-14-00054) led by Helen Keller International and implemented by RTI International in Ethiopia, and the Task Force for Global Health. KD is funded by a Wellcome Trust Intermediate Fellowship in Public Health and Tropical Medicine [grant number 201900].

Competing interests: None declared.
Etiopía.

La filariose lymphatique et la podoconiose sont des problèmes majeurs dans la région de l'éthiopie. Elles ont causé un retard dans le développement du pays, et ont également entravé l'accès à l'éducation et aux services médicaux. Le gouvernement éthiopien a donc pris des mesures pour contrôler et prévenir ces maladies. L'objectif principal de cette étude était de déterminer l'impact de la gestion intégrée de la morbidité liée à la filariose lymphatique et à la podoconiose en Éthiopie.

La filariose lymphatique et la podoconiose sont des maladies causées par des protozoaires différents. La filariose lymphatique est causée par l'œil de la mouche, et la podoconiose est causée par les champignons. Les deux maladies causent des douleurs et des démangeaisons, et peuvent également entraîner des lésions cutanées et des troubles de la circulation sanguine.

La gestion intégrée de la morbidité est une approche qui combine plusieurs approches pour contrôler et prévenir les maladies. Elle comprend la mise en place de services de santé, la formation des personnel de santé, et la promotion de l'éducation publique.

Les résultats de l'étude montrent que la gestion intégrée de la morbidité a permis de réduire la morbidité liée à la filariose lymphatique et à la podoconiose. Les services de santé ont été renforcés, et la formation des personnel de santé a été améliorée. Cela a permis de construire un système de santé plus efficace.

En conclusion, la gestion intégrée de la morbidité est une approche efficace pour contrôler et prévenir les maladies. Elle peut aider à améliorer la santé des populations et à accélérer le développement économique.

Résumé
Gestion intégrée de la morbidité liée à la filariose lymphatique et à la podoconiose en Éthiopie
Problème La filariose lymphatique et la podoconiose sont des problèmes majeurs dans la région de l'éthiopie. Elles ont causé un retard dans le développement du pays, et ont également entravé l'accès à l'éducation et aux services médicaux. Le gouvernement éthiopien a donc pris des mesures pour contrôler et prévenir ces maladies. L'objectif principal de cette étude était de déterminer l'impact de la gestion intégrée de la morbidité liée à la filariose lymphatique et à la podoconiose en Éthiopie.

Approche Le ministère de la Santé et ses partenaires ont utilisé les structures gouvernementales existantes pour mettre en place des services de santé en vue de la gestion intégrée de la morbidité liée au lymphoedème. Une cartographie intégrée de la maladie a été réalisée dans 659 des 817 districts pour repérer ceux où elle était endémique. Afin d'orienter l'affectation des ressources, des agents de vulgarisation sanitaire qualifiés ont intégré des évaluations de la charge de morbidité dans 53 districts présentant une charge clinique élevée. Pour assurer une prestation standard de soins, le ministère de la Santé a rédigé des directives sur la gestion intégrée de la morbidité liée à la filariose lymphatique et à la podoconiose. Ces directives comportent un algorithme de traitement et un programme de soins précis.

Resultats À ce jour, 542 agents de santé provenant de 53 centres de santé ont reçu une formation en gestion intégrée de la morbidité. En 2014, seuls 24% (87) des 363 établissements de santé participant à l'enquête ont fourni des services liés à la filariose lymphatique et 12% (44) ont fourni des services liés à la podoconiose.

Les changements significatifs ont permis de mettre en place une approche intégrée pour la gestion de la morbidité liée à la filariose lymphatique et à la podoconiose. Les processus mis en place pourraient être appliqués dans d'autres environnements où ces maladies sont co-épidémiques.

Leçon tirée La mise en place d'une approche intégrée pour la gestion de la morbidité liée à la filariose lymphatique et à la podoconiose a été possible en Éthiopie. Les processus utilisés pourraient être appliqués dans d'autres environnements où ces maladies sont co-épidémiques.

655
гарантировать, что медицинская помощь будет оказана всем нуждающимся.

Оцененные изменения Основываясь на данных, полученных в ходе мониторинга, было определено, что в 2016 году 44% пациентов, которые нуждаются в помощи, были успешно оказаны помощь. Это свидетельствует о том, что текущий подход к управлению заболеваемостью лимфатическим филяриатозом и подокониозом эффективен.

Выводы В Эфиопии был внедрен комплексный подход к управлению заболеваемостью лимфатическим филяриатозом и подокониозом. Используемые процессы могут применяться в других условиях, для которых эти заболевания являются эндемичными.

References


Resumen
Gestión integrada de la morbilidad para la filariasis linfática y la podoconiosis, Etiopía

Situación La filariasis linfática y la podoconiosis son las mayores causas del linfedema tropical en Etiopía. Las enfermedades requieren una atención sanitaria similar, pero en 2012 el sistema sanitario de Etiopía no integró la gestión de la morbilidad.

Enfoque Para establecer servicios sanitarios para la gestión integrada de la morbilidad por linfedema, el ministerio de salud y colaboradores utilizaron estructuras gubernamentales existentes. Se realizó un mapeo integrado de la enfermedad en 659 de 817 distritos para identificar los distritos endémicos. Para informar sobre la asignación de recursos, agentes formados de extensión sanitaria integraron evaluaciones sobre la carga de la enfermedad en 56 distritos con una carga clínica elevada. Para garantizar un suministro estándar de la atención, el ministerio de salud desarrolló unas directrices para la gestión integrada de la morbilidad de la filariasis linfática y la podoconiosis, las cuales contenían un algoritmo de tratamiento y un paquete definido de cuidados. Profesionales con experiencia en la gestión del linfedema formaron a trabajadores de la salud empleados por el gobierno sobre la gestión integrada de la morbilidad. Para controlar la integración, se incluyó un indicador del número de pacientes tratados de linfedema en el sistema nacional de información para la gestión de la salud.

Marco regional En 2014, solo el 24% (87) de los 363 centros sanitarios encuestados ofrecían servicios para la filariasis linfática, mientras que el 12% (44) ofrecían servicios para la podoconiosis.

Cambios importantes Hasta la fecha, 542 trabajadores sanitarios de 53 centros de salud en 24 distritos han sido formados acerca de la gestión integrada de la morbilidad. Entre julio de 2013 y junio de 2016, el sistema nacional de información para la gestión de la salud registró 46 487 pacientes tratados de 189 distritos.

Lecciones aprendidas En Etiopía, fue viable un enfoque integrado de la gestión de la morbilidad para la filariasis linfática y la podoconiosis. Los procesos utilizados podrían ser aplicables en otros lugares donde estas enfermedades son coendémicas.