Modifying homes for persons with physical disabilities in Thailand
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Problem Thailand passed the Persons with Disabilities Empowerment Act in 2007. The Act, which is in compliance with the United Nations Convention on the Rights of Persons with Disabilities, ensures that registered persons with disabilities are entitled to home environment modifications’ benefits up to a maximum of 20 000 baht (equivalent to 670 United States dollars); however, the Act’s enforcement is still weak in Thailand.

Approach In 2013, researchers developed a home modification programme, consisting of a multidisciplinary team of medical and nonmedical practitioners and volunteers, to modify homes for persons with disabilities. The programme recruited participants with physical disabilities and assessed their functioning difficulties. Participants’ homes were modified to address identified functioning difficulties.

Local setting The project was implemented in four provinces in collaboration with staff from 27 district hospitals located in north-eastern Thailand.

Relevant changes After the home modifications, all 43 recruited participants reported reduced difficulties in all areas, except for participants with severe degrees of difficulties, such as those reporting being unable to walk and unable to get up from the floor. The participants’ quality of life had also improved. The average EQ-5D-5L score, measuring quality of life, increased by 0.203 – from 0.346 at baseline to 0.549 after the modifications.

Lessons learnt Home modifications in low-resource settings are technically and financially feasible and can lead to reducing functioning difficulties and improving the quality of life of persons with disabilities. Implementation requires government subsidies to finance home modifications and the availability of technical guidelines and training on home modifications for implementing agents.

Introduction
Home environment modifications are essential to improve the quality of life of persons with disabilities. Parts of a home and its surroundings, together with the built environment, should be changed according to the impairments of persons with disabilities to minimize difficulties in activities of daily living and to alleviate the burden on carers. Article 28 of the United Nations Convention on the Rights of Persons with Disabilities ratified by Thailand in 2008 endorsed the right of persons with disabilities to independent living. International experiences show different countries use more than one financing mechanism to finance home environment modifications that aim to enhance the independent living of persons with disabilities. A regulation promulgated by the Thai Ministry of Social Development and Human Security describes the appropriate home surroundings and built environment to be accessible by persons with disabilities, however the enforcement of the regulation is still weak.

Local setting
Thailand is an upper middle-income country with an estimated population of 68 million in 2015. Thailand passed the Persons with Disabilities Empowerment Act in 2007. The Act which is in compliance with the United Nations Convention on the Rights of Persons with Disabilities, ensures that registered persons with disabilities are entitled to government subsidies for home environment modification to a maximum of 20 000 Thai baht (equivalent to 670 United States dollars). Provincial social development and human security offices are responsible for implementing this benefit. In addition, the provincial rehabilitation fund, which has been set up by a 50–50 contribution from the Thailand National Health Security Office and the Provincial Administration Organization, also provides financial support for home modifications to persons with disabilities.

Approach
In 2013, researchers from Mahasarakham University, faculty of medicine, developed a home environment modification programme for persons with physical disabilities. The researchers formed a project team consisting of two architects, two engineers, a group of local builders, nurses and social workers from communities where the selected homes were located. The project was implemented in four provinces Kalasin, Khonkaen, Mahasarakham and Roi-Et, in collaboration with 27 district hospitals located in the provinces. These hospitals have health-care teams, consisting of physical therapists, nurses and health care volunteers who visit persons with disabilities in their homes. We asked these teams to recruit persons with physical disabilities, including elderly people, residing in these provinces to participate in the programme. Researchers from the faculty of medicine ran four training sessions for the project team on universal design concept application and on how to do home and built-environment modifications in order to enhance the functions of persons with disabilities.
the consent form. The project team set
participants selection were home owner -
(d460); (v) having difficulties climb -
nursing was measured using the
Physical therapists and primary care
modifying, disability and health
Functioning was measured using the
health and disability (ICF). Seven
difficulty levels as defined in the ICF
were used as selection criteria: (i)
having difficulties walking (ICF code d450);
(iii) having difficulties getting up from the
floor or filling a specific piece of land to
prevent flooding. The number of homes
weren't possible in the homes for various
reasons, therefore newer quarters needed
to be built. In Group 4 home modifications
were necessary, but only to ensure
safety and security for the participant,
rather than to improve the enabling en-
rvironment, for example replacing a new
roof or filling a specific piece of land to
prevent flooding. The number of homes
in each group, the cost of modifications
and the duration of the construction for
each group is presented in Table 1.

### Table 1. Quality of life scores before and after home modifications, Thailand, 2013

| Type of home modifications | No. (% of homes) | Duration of construction, days | Average cost of modifications, US$ | EQ-SD-5L baseline score | EQ-SD-5L after modifications score | Net score change |
|----------------------------|------------------|---------------------------------|-----------------------------------|------------------------|-----------------------------------|------------------|
| Group 1: Modifications with minimum changes | 12 (29) | 2–15 | 697 | 0.337 | 0.495 | 0.158 |
| Group 2: Modifications in some part of the home | 20 (47) | 3–20 | 1384 | 0.410 | 0.574 | 0.164 |
| Group 3: New quarters built | 9 (20) | 11–30 | 2130 | 0.198 | 0.546 | 0.348 |
| Group 4: Modifications to ensure safety and security | 2 (4) | 5 and 14 | 744 | 0.184 | 0.511 | 0.327 |
| All | 43 (100) | NA | NA | 0.346 | 0.549 | 0.203 |

NA: not applicable; US$: United States dollars.

Note: EQ-SD-5L is a standardized instrument measuring quality of life, using five dimensions: mobility, self-care, usual activities, pain and discomfort and, anxiety and depression. Each dimension contains an additional five levels: no problem, slight problem, moderate problem, severe problem and extreme problem. EQ-SD-5L scores range from −1 to 1, with −1 being the lowest quality of life score and 1 being the highest quality of life score.

### Video clips that show the general condition of the homes and parts of the homes to be modified and the daily activities performed by the persons with disabilities residing in the homes. The physical therapists and primary care nurses reassessed the participants’ functioning difficulties after the home modifications were completed through assessments in the participants’ homes.

### Home modifications

We assigned the selected homes into four groups according to the type of modifications needed. Group 1 included those homes that required minimal changes, such as installing handrails or building wider doors. Group 2 included those homes that required changing some part of the home, for example, relocating a toilet to be closer to the participant’s living area. In Group 3 modifications weren’t possible in the homes for various reasons, therefore newer quarters needed to be built. In Group 4 home modifications were necessary, but only to ensure safety and security for the participant, rather than to improve the enabling environment, for example replacing a new roof or filling a specific piece of land to prevent flooding. The number of homes in each group, the cost of modifications and the duration of the construction for each group is presented in Table 1.

### Financing the modifications

In addition to the government subsidies, provincial rehabilitation and subdistrict administrative organizations’ funds and donations from participants’ families were used to pay for home modifications. Volunteers from the local community, for example, family members, Buddhist monks, soldiers and other villagers worked on the modifications. In the areas where volunteers were unavailable, local professional builders were hired. On-site coordination and management were done by district hospital staff. The government subsidies and the provincial rehabilitation funds covered approximately 70% of the modification costs, and were used mostly to buy building material. The remaining 30% was mobilized from subdistrict administrative organizations and households and was used to cover labour cost, including meals for volunteers.

### Relevant changes

Of the 77 persons with disabilities we identified, we recruited 62 persons to participate in the project. Six participants died before the home modifications started, two others died later during the modifications and eleven were still waiting for funding when the project started. Therefore, only 43 participants were included in the project and their 43 homes were successfully modified.

The level of difficulty experienced by the participants when performing daily activities was assessed before and after the home modifications. When compared with the baseline assessment, this had decreased after the modifications. At the baseline assessment, the most frequently reported activities performed with difficulties by the 43 participants were, walking 97.7% (42), getting up from the floor 88.4% (38), getting up from a chair/bed 62.8% (27), moving around inside the home 30.2% (13), moving around outside the home using equipment 39.5% (17) and climbing stairs 23.3% (10). After the modifications, the level of difficulties decreased for 23.8% (10/42) of the participants who had reported having difficulties walking and 29.6% (8/27) of those who...
had reported having difficulties getting up from a chair/bed. The decrease for other activities was 44.7% (17/38) for getting up from the floor, 38.5% (5/13) for moving around inside the home and 11.8% (2/17) for moving around outside the home using equipment. As shown in Table 2, after the home modifications, the number of participants reporting that their difficulties were reduced had increased in all function areas except for participants with severe degrees of difficulties, such as those reporting themselves as unable to walk (d450) and unable to get up from the floor (d4101), indicating that home modifications cannot improve functions for those with severe degrees of difficulties. The average EQ-5D-5L score had also increased by 0.203 from 0.346 at baseline to 0.549, indicating that in general the quality of life of persons with disabilities participating in the programme was improved (Table 1).

### Lessons learnt

Box 1 summarizes the main lessons learnt. The programme demonstrated that home modifications in low-reourced settings are technically and financially feasible and can lead to a reduction in functioning difficulty and improvement in the quality of life of persons with disabilities. Technical expertise for home assessment and modification design can be mobilized and supported locally, especially in areas where local training institutions, such as vocational colleges, are available. A multidisciplinary team consisting of medical and nonmedical practitioners, as well as volunteers from the community can be convened either by local government organizations or district hospitals to support a home modification programme. Local government’s ownership and leadership of the programme is critical to mobilize local resources.

#### Competing interests

None declared.
Lessons from the field
Modifying homes for persons with disabilities in Thailand

Sirinart Tongsiri et al.

Thaïlande : Modification des domiciles de personnes handicapées physiquement

Problème En 2007, la Thaïlande a promulgué une loi sur l’autonomisation des personnes vivant avec un handicap. Cette loi, conforme à la Convention des Nations Unies relative aux droits des personnes handicapées, stipule que les personnes handicapées reconnues ont le droit de bénéficier d’une modification de leur domicile, à hauteur de 20 000 bahts maximum (670 dollars des États-Unis). Or, l’application de cette loi reste limitée en Thaïlande.

Approche En 2013, des chercheurs ont conçu un programme de modification du domicile, consistant à faire intervenir une équipe multidisciplinaire de volontaires et de professionnels médicaux et non-médicaux afin d’adapter le domicile de personnes handicapées. Dans le cadre de ce programme, plusieurs participants présentant un handicap physique ont été recrutés, et leurs difficultés dans la vie quotidienne ont évolué. Les domiciles des participants ont ensuite été adaptés en fonction des difficultés du quotidien ainsi identifiées.

Environnement local Ce projet a été mis en œuvre dans quatre provinces, en collaboration avec le personnel de 27 hôpitaux de districts du Nord-Est de la Thaïlande.

Changements significatifs Après modification de leur domicile, les 43 participants recrutés ont tous affirmé rencontrer moins de difficultés dans tous les domaines, excepté pour les participants confrontés à des difficultés particulièrement lourdes, tels que ceux qui avaient indiqué être incapables de marcher et de se relever du sol. La qualité de vie des participants s’est également améliorée. Le score moyen obtenu avec le questionnaire EQ-5D-5L (qui évalue la qualité de vie) a augmenté de 0,203 —— 从基准线的 0,346 提高到改进后的 0,549.

Leçons tirées La modification des domiciles dans des contextes de faibles ressources est techniquement et financièrement réalisable et peut entraîner une réduction des difficultés rencontrées par les personnes.

Discussion
La modification des domiciles des personnes handicapées physiquement en Thaïlande tire des leçons suivantes.

1. L’approche multidisciplinaire est essentielle pour une adaptation efficace du domicile.
2. L’engagement de la population locale est crucial pour la sustentabilité du programme.
3. Il est nécessaire de prendre en compte l’environnement local et les ressources disponibles.
4. Le suivi des participants et l’évaluation des changements sont indispensables.

Conclusions
La modification des domiciles des personnes handicapées physiquement en Thaïlande, grâce à une approche multidisciplinaire et à l’engagement de la population, a permis d’améliorer la qualité de vie des participants, tout en respectant les contraintes financières et environnementales.

Acknowledgments
Les auteurs remercient les participants du programme, les professionnels de santé et les partenaires locaux pour leur engagement et leur soutien.

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Bull World Health Organ 2017;95:140–145 doi: http://dx.doi.org/10.2471/BLT.16.178434

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Изменение жилищных условий для людей с физическими недостатками в Таиланде

Проблема В 2007 году в Таиланде был принят закон «О расширении прав и возможностей людей с инвалидностью». Закон, принятый в соответствии с Конвенцией о правах инвалидов Организации объединенных наций, гарантирует, что поставленные на учет лица с инвалидностью имеют право на выплаты для изменения жилищных условий размером до 20 000 батов (670 долларов США); тем не менее этот закон до сих пор слабо претворяется в жизнь в Таиланде.

Прием Позднее было принято решение о проведении анализа Местные условия существующих жилищных условий для жильцов с инвалидностью в Таиланде. В рамках программы была проведена оценка жилищных условий жильцов с инвалидностью и определены ограничения их жизнедеятельности. Жилища участников были изменены для уменьшения определенных ограничений жизнедеятельности.

Местные условия Проект был реализован в четырех провинциях при поддержке персонала из 27 районных больниц, расположенных в северо-восточном Таиланде.

Однако, данные исследования показывают, что даже с учетом значительной суммы, которая была выделена на эти цели, жилищные условия людей с инвалидностью остаются далекими от идеала. Несмотря на то, что закон об обеспечении жилищных условий для людей с инвалидностью вступил в силу, его реализация в значительной степени зависит от финансового обеспечения и осведомленности местных органов власти о проблемах, связанных с инвалидностью.

Таким образом, для решения проблемы изменения жилищных условий людей с инвалидностью в Таиланде необходимы дальнейшие усилия как со стороны государственных структур, так и на негосударственном уровне. Важно учитывать специфику каждого региона и учитывать мнения жильцов с инвалидностью при планировании и реализации проектов по обеспечению жилищных условий для людей с инвалидностью.
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