Application of standard treatment guidelines in rural community health centres, Timor-Leste

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Objective To analyse nurses’ and midwives’ knowledge of and attitudes towards standard treatment guidelines (STGs), which were developed to help their practices at rural community health centres (CHCs) in Timor-Leste.

Methods Fifty-five nurses and midwives were individually interviewed. Data were analysed qualitatively using the Framework approach.

Results Overall, the standard treatments for acute respiratory tract infections, malaria and diarrhoea were well known by the respondents. Clinical nurses showed precise and detailed knowledge, especially for antibiotic use. The respondents were willing to use STGs and believed that they ‘should’ follow them. This feeling arose due to their self-awareness as frontline health workers and, at the same time, as peripheral civil servants. The changes brought about by the introduction of STGs were positively perceived. Three components of the change were observed: the concept, daily practice and perceived patient satisfaction. The respondents had previously felt a lack of confidence and hoped to improve their capacity as health care workers; they became confident in their practices by using STGs. Self-confidence was identified more clearly in the clinical nurse interviews. Few difficulties in using STGs were indicated, and the respondents suggested ways to deal with these difficulties.

Discussion By using the STGs, the nurses/midwives gained knowledge and self-confidence. The positive perception of the changes promoted further use of the STGs. Clinical nurse training positively influenced the knowledge of and attitudes towards the STGs. Few difficulties in applying STGs in daily practice were identified, which is contrary to previous studies that targeted physicians in the Western world. Development of STGs within a health policy framework was considered a key factor. The STGs exist across related policies and various programmes, which are interconnected. The Timor-Leste experience indicates the value of STGs for non-physician health care providers at the primary health care level.

Keywords Standard treatment guidelines, primary health care, nurses, health policy framework, Timor-Leste, qualitative study
KEY MESSAGES

- The development of standard treatment guidelines (STGs) for non-physician health professionals at the primary health care level, during Timor-Leste’s rehabilitation period, was related to the Basic Package of Services policy and other policies within a health policy framework, with the STGs existing across various programmes.

- The understandable and manageable contents of the STGs led to the nurses/midwives’ acceptance of the policy changes to introduce the STGs and consequent changes in daily practice, and further, resulted in their positive perception of these changes.

- The development and introduction of STGs which reflect the local needs and reality is considered to influence the application of STGs in practice.

Introduction

Standard treatment guidelines (STGs), which are also called clinical guidelines or practice guidelines, are defined as ‘systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances’ (Field and Lohr 1990). They have been established to improve the quality and effectiveness of health care and to minimize potential harm (Brook 1996; Woolf et al. 1999; Burgers et al. 2003). Although limitations and possible risks are also suggested (for example, they may cause inappropriate treatment for an individual patient, rigid and/or excessive demands on health professionals’ practice, and unaffordable interventions in a health system), STGs have become popular in Western countries as a means of responding to needs in the health care system, such as rising health care costs, variation in service delivery and the desire of health professionals and patients to provide or receive the best care (Woolf et al. 1999). Supported by STGs, patients can receive improved health outcomes in the same manner wherever they are treated. STGs have the potential to bring about distributive fairness by promoting better service delivery and contributing to health equity by impacting on disadvantaged populations (Woolf et al. 1999; Dans et al. 2007). They can improve the consistency of care provided by ensuring and updating the health care provider’s knowledge (Woolf et al. 1999), although there is a possibility that translation of evidence into practice may be delayed (Pugh et al. 2006). Where information and human resources are scarce, they help health professionals employ evidence-based medicine (Soltani et al. 2004). Locally applied STGs are expected to provide effective health care where financial situations are difficult (Garner et al. 1998). However, evidence for an effective intervention in one setting is not always useful in another setting, and strategies used in industrialized nations may not be successful in under-resourced countries (Soltani et al. 2004; Siddiqi et al. 2005).

The existence of STGs does not guarantee that they are used in practice (Feder et al. 1999). Previous studies have suggested that people generally resist a change in their workplace (Curtis and White 2002; Bloisi et al. 2003), and this resistance can be a factor that makes health professionals hesitate to adhere to STGs (Cabana et al. 1999; LeTourneau 2004). Cabana et al. (1999) reviewed previous studies to identify barriers to physicians’ adherence to STGs and categorized them into seven common themes: lack of awareness, lack of familiarity, lack of agreement with guidelines, lack of self-efficacy, lack of outcome expectancy, lack of motivation, and external factors. This model has been used by several researchers to discuss barriers to recommended treatment of a specific condition (Espeland and Baerheim 2003; Schouten et al. 2007). Other authors examining barriers to, or difficulties in, using STGs have found that issues not only arise from individual professional knowledge and attitudes, but also are attributable to the organizational and social contexts. In addition, features of the guidelines themselves are influential (Oxman and Flottorp 2001; Grol and Grimshaw 2003). These findings have, however, been reported from Western countries by studying physician practice. Little is known about non-physician perception of STGs in under-resourced areas.

The Democratic Republic of Timor-Leste (hereafter Timor-Leste) was reconstructed as a nation under difficult circumstances and was restored its sovereignty in May 2002. On the basis of the relevant sections in the National Development Plan and the Health Policy Framework of the Ministry of Health (MoH), the policy and planning of the health care system in Timor-Leste were developed to emphasize equity and cost-effectiveness (Planning Commission 2002; MoH Timor-Leste 2002a). The Basic Package of Services policy, which was outlined in the Health Policy Framework, attempted to deliver the major needs for public health and curative treatment at primary health care (PHC) facilities. In addition to the unavailability of laboratory testing equipment at the sub-district level, the country suffered from a serious shortage of medical doctors when the new health system was launched: in 2002, there were only 12 Timorese medical doctors working under the new MoH for an estimated population of 850,000 (MoH Timor-Leste 2002b). The National Health Workforce Plan projected that it would not be possible for a doctor to reside in every sub-district for a significant period of time, while accounting for a planned increase in the number of doctors (MoH Timor-Leste 2005).3

In this situation, standardized clinical practice for prioritized illnesses and conditions such as acute respiratory tract infections (ARTIs), malaria and diarrhoea was introduced to nurses and midwives (hereafter nurses/midwives) at community health centres (CHCs). One ‘Level-2’ CHC (as they were called during the beginning of the nation’s health system development) was allocated to every sub-district that is not the district capital, where an upper-level CHC with beds or a referral hospital exists. In principle, there were neither laboratory facilities nor inpatient facilities at the sub-district level, and there was no medical doctor until the end of 2005. Standardized practice was introduced by using several kinds of
The objective of this study was to analyse nurses’/midwives’ knowledge of and attitudes towards the newly developed STGs to help make clinical diagnoses and provide treatment at rural CHCs in Timor-Leste, where a nation was being reconstructed after a critical situation. Specific research questions included: (1) How well do nurses/midwives know the newly introduced STGs? (2) What do they think about their own practice regarding the use of medicines and adherence to their new STGs? (3) What do they think has changed since the introduction of their new STGs? (4) What are the difficulties in applying their new STGs in the local context? In this study, the clinical nurse training textbooks and the IMCI chart-book, both of which were developed and published by the Timor-Leste MoH, were referred to as STGs. These documents are linked to other nationally implemented programmes, such as the National Protocol of Malaria Management, the National Tuberculosis Control Programme and the national essential medicines list. Describing and analysing the Timorese experience, the study aimed to understand the application of STGs for non-physician health professionals at the PHC level in resource-limited circumstances.

Methods
This qualitative study was conducted as part of a mixed methods research project (Higuchi 2008). The quantitative element of the original research is yet to be published at the time of writing. CHCs that were categorized as ‘Level 2’ at the time of sampling (hereafter CHC) were targeted. Twelve of 56 CHCs were excluded from this study, including those in the capital city and enclave district and those where the pre-test had been conducted. Twenty CHCs were randomly sampled from the remaining 44 CHCs for the other (quantitative) part of the mixed methods research, and respondents in this study were recruited from the same CHCs. The selected CHCs, shown in Figure 1, were visited by the principal investigator and eight Timorese data collectors from February to August 2006.

For the second-stage sampling, three members of the health staff were selected at each CHC according to the following criteria: chief nurse, clinical nurse and one ‘other’ nurse/midwife. A chief nurse was defined as a senior nurse in each CHC, who had been officially appointed as the chief by the MoH. They usually have the same educational background as the other CHC staff members but longer experience. They work as both manager and nurse. A clinical nurse was defined as a nurse or midwife who had attended clinical nurse training, regardless of his/her position. A respondent in the ‘other’ group was defined as a staff member who was neither the chief nurse nor the clinical nurse, but was either a nurse or a midwife. Nurse assistants were excluded from the sampling. As respondents could not be found in all the CHCs as planned, the final sample size was 16 chief nurses, 18 clinical nurses and 21 other nurses/midwives. The average age of the respondents was 39 years, and the average work experience was 17 years. There were 42 male and 13 female respondents. Except for four who had higher education, all graduated from a ‘basic nursing school’, which was a vocational high school established during the Indonesian regime. Of the 18 clinical nurses, 12 had both clinical nurse and IMCI training, and six had attended only clinical nurse training. Twenty-four respondents received only IMCI training, and 13 had neither type of training.

One pair from the eight Timorese data collectors (one interviewer and one note-taker) individually interviewed each respondent using a semi-structured topic guide, which was developed based on the established research questions and consisted of five topics. When asking about contents of STGs in the interviews, questions focused on three diseases (ARTIs, malaria and diarrhoea) and the use of antibiotics and vitamins. Extracts of STG contents are presented in Box 1. Interviewing and note-taking were conducted in Tetum, occasionally mixed with Indonesian. The original transcripts were translated into Indonesian by two data collectors. The Indonesian translations of the interview notes were used for data analysis, supplemented by reference to the original transcription. The Framework approach was applied for the analysis. This approach was developed specifically for applied qualitative research that has clear aims at the outset (Ritchie et al. 2003; Pope et al. 2006). Textual data were indexed according to the identified framework and then synthesized in each index by the principal investigator.

The research proposal was approved in advance by the Proposal Review Panel of the MoH, Timor-Leste, and the Research Ethics Committee of the London School of Hygiene & Tropical Medicine.

Results
After the ‘familiarization’ stage of the Framework approach, eight indexes for the thematic framework were identified: (1) desire for improvement, (2) acceptance of STGs and related training, (3) improved knowledge, (4) positive perception of changes, (5) increased self-confidence, (6) active attitudes towards patients and colleagues, (7) active attitudes towards difficulties, and (8) working conditions. The original data were synthesized in each of the eight indexes and then were re-organized so that they responded to the established four research questions. Figure 2 indicates the development of the thematic framework.
Knowledge of standard treatment

All respondents were aware of the existence of the targeted documents (the clinical nurse training textbooks and the IMCI chart-book) as their new STGs, although some did not know the contents. Overall, the key issues recommended in the Timor-Leste STGs for the three target diseases were well known. Among the three target diseases, standard management for malaria was especially well understood. Only one respondent indicated incorrect management of patients who were suspected of having malaria, where no blood smear testing was available.

Although the respondents generally showed some knowledge of STGs, the level of knowledge varied. Clinical nurse respondents on average referred to STGs more accurately and in more detail than the other respondents. This contrast was particularly evident in terms of the knowledge of antibiotic use. The clinical nurses indicated treatments that contradicted the STGs to a far lesser extent than the other respondents. For example, many of them indicated two categories of ARTIs, indications of the antibiotic use for ARTIs, and antibiotic choices.

"Upper ARTIs, like flu, cough, congested nose, headache, do not need treatment but only counselling, and we advise patients to drink much water and not to smoke. Lower ARTIs or pneumonia need antibiotics. According to guidelines, the first choice is co-trimoxazole..." (clinical nurse)

In spite of good knowledge of the STGs in general, many respondents misunderstood the functions and clinical indications of vitamins. The majority believed vitamins were effective for certain types of patient condition. The most frequently cited answer was that vitamins worked for appetite loss, particularly when recovering from a certain disease such as ARTIs or malaria. Anaemia and under-nutrition were also suggested as reasons for vitamin prescription. Some believed vitamins were effective for general conditions such as regaining ‘energy’, ‘stamina’ or ‘spirit’, and so on. Such misunderstanding of vitamins was observed regardless of respondent group.

Attitudes of present practice in relation to STG use

The interviewed nurses/midwives were willing to use STGs, and the concept of standardizing treatments was well accepted.

"Treatment in this CHC is the same, although the nurse is different because all [nurses] use STGs and because STGs form criteria for treatments." (other nurse/midwife)

In addition, no one refused or disagreed with a specific STG. While describing the background of the introduction of the STGs, the nurses/midwives indicated ‘a lack of confidence’ in their previous practice after international relief aid organizations had left and stated that they ‘just relied on experience’. They described their previous practice as ‘random’, ‘perfunctory’, ‘uncertain’ or ‘disordered’. As a result, they ‘hoped to
increase their capacity', and their new STGs helped in this improvement. They suggested that STGs were ‘advantageous’ or ‘useful’ for their practice.

“STGs have a great advantage, because they resemble a teacher if we have difficulties.” (clinical nurse)

“These STGs are very good, because they can give a good path for us and our staff [so that] they can give treatment for patients.” (chief nurse)

The respondents believed that they ‘should’ follow the STGs. Two different stances emerged to explain this feeling of compliance. On the one hand, some respondents felt they had their responsibilities as frontline workers in the local community. They believed themselves to be ‘the only people who could treat sick patients’ and thought that the standardized treatments helped them in such situations. On the other hand, their vulnerable positions in the civil service hierarchy influenced their sense of obedience. Some thought they had to comply with the STGs, because these had been developed and implemented by the MoH in collaboration with international organizations; they suggested that they had ‘no choice but to follow the decisions made by people in positions of authority’. For them, people who developed the STGs are ‘intelligent’, ‘big’ or ‘international’. Such comments were not made by the clinical nurses.

“Sick people should come to [see] the nurse, because there is nowhere else they do (i.e. receive) treatment. Importantly, we, as the nurses, are ready and can do something for the Timorese.” (clinical nurse)

“. . .we have STGs from international [organizations] that we just follow.” (other nurse/midwife)

Overall, the respondents were confident about their present practice. They demonstrated their responsibilities to patients when prescribing medicines and suggested that they would ‘not compromise with patient expectations’ if this was inappropriate. For example,

“…some [patients with a symptom like a] runny nose hope to get medicines, too. [They] become angry if [they] do not have (i.e. receive) medicines; however, we explain [that it is unnecessary].” (clinical nurse)

Some respondents thought that patient comprehension of medical advice and their adherence to the prescription were influenced by health care providers, whereas others believed that patient comprehension was dependent on the individual patient’s ability to understand the advice given. Clinical nurses showed their self-confidence more explicitly than the others. In addition, more active attitudes to colleagues, including foreign doctors, were found in clinical nurses.

Changes brought about by the introduction of STGs

The suggested changes were positively perceived by the respondents. Three components of the changes were observed: the policy concept of using STGs, daily practice and perceived patient satisfaction. First, standardized treatments brought about a change in the respondents’ work. Although the term ‘standard treatment guidelines’ had been well known since the previous regime, their answers suggested that working with the new STGs was a new epoch for them.

“Before, we gave treatment based on experience, but [now, after] Timor-Leste independence, we are using STGs.” (clinical nurse)

“From 2001 to 2003, we did (i.e. practiced) according to [what we had learned during the time of] Indonesia, from 2004 to the present, we are doing according to STGs - STGs gave a big change to us.” (chief nurse)

Second, they recognized actual changes in daily practice, such as:

“I feel there are differences, for example, we gave antibiotics for only one day for severe diseases, but after training, we give antibiotics for five days to patients with ARTIs.” (clinical nurse)
Showing a contrast between ‘before’ and ‘after’ they had received the STGs, respondents expressed the changes in actual and concrete examples from their daily practice: they began to give a detailed physical examination, not to use injections very much, not to use antibiotics for patients with common colds or simple diarrhoea, to use chloroquine and Fansidar at the same time for suspected malaria patients, to use age and weight to decide a dose of medicine for child cases, and to give advice to patients.

Third, they perceived changes in patient satisfaction after they had started using the STGs.

“Patients are contented with our care now, because we give an examination from head to feet.” (clinical nurse)

Difficulties in applying and implementing STGs

Few difficulties in using STGs were identified by the respondents. They stated that if there was a difficulty, they would simply ‘open the book’, by which they meant the STGs.

“So far, there is no difficulty in applying STGs, if there is [a difficulty], we consult each other.” (other nurse/midwife)

Besides turning to the STGs, the respondents suggested some possible measures for resolving a problem: helping each other, referring a difficult case to a higher-level facility or to the doctor, and giving feedback about the problems to the MoH. However, they also reported some external barriers to their practice. For example, they suggested patient factors such as poor comprehension of and adherence to taking medicines, insufficient awareness of health issues among the general public and inappropriate expectations for medicines. Transportation difficulties for referrals, shortage of medicines, and limited staff numbers were also discussed.

Discussion

The nurses/midwives who responded to the interviews had accepted the use of the STGs when the STGs were newly introduced through training. Behind this acceptance, it was found that nurses/midwives had felt their previous lack of capacity and had sought to improve their practice. By using the STGs, the nurses/midwives gained knowledge and self-confidence. The respondents, in particular clinical nurses who had intensive training for the STGs, showed their active attitudes towards getting along with patients and colleagues, as well as towards solving problems in daily practice. In general, the interviewed nurses/midwives positively perceived the changes brought about by the introduction of the STGs, which in turn promoted further use of STGs. They declared few difficulties in applying STGs, although some difficult working conditions were identified. Instead, the nurses/midwives believed that STGs would be useful when they faced a problem in their practice. Figure 3 shows the consequences and relationships of eight identified themes.

These findings are in contrast with those of previous studies that targeted physicians in the Western world. Previous studies have suggested that ‘awareness’ and ‘familiarity’ are factors that influence knowledge of STGs (Cabana et al. 1999), but awareness does not ensure familiarity with the contents (Pierre et al. 1991; Wigder et al. 1996). In this study, there was no doubt that all the nurses/midwives interviewed were well aware of the existence of the new STGs, which implies that the nationwide dissemination was successful. After comparing the knowledge of the respondents who had attended training and those who had not, it was clear that training familiarizes participants with the contents of the STGs. Training also affected the attitudes of the respondents, particularly by increasing their ‘self-efficacy’ and ‘motivation’, as discussed in previous studies (Cabana et al. 1999; Espeland and Baerheim 2003; Schouten et al. 2007). We found more active attitudes
Towards patients and colleagues, including foreign doctors, in the clinical nurse answers than in the others.

Another component of the mixed methods research concurrently conducted with the work described here quantified nurses’/midwives’ use of medicines and adherence to STGs. That quantitative study demonstrated that prescriber training, especially clinical nurse training, was associated with lower use of antibiotics and greater adherence to STGs (Higuchi 2008). In this qualitative study, more accurate and detailed knowledge and confident attitudes, in particular regarding antibiotic prescriptions and the use of the STGs, were shown by the clinical nurses. This suggests that the qualitative study presented here and the concurrent quantitative study complement each other. Further, misunderstandings of the functions and clinical indications of vitamins detected in this qualitative part of the research were consistent with the findings of the quantitative part, which displayed unnecessary vitamin prescriptions.

After integrating the findings from the two studies, it was evident that clinical nurse training positively influences the knowledge of STGs, as well as the prescribing attitudes and practice. These results are compatible with those of previous studies, which indicated that simply distributing materials does not effectively disseminate STGs (Grimshaw and Russell 1993) and that dissemination of STGs through a training course is more likely to ensure implementation (Onion and Bartzokas 1998; Zurovac et al. 2004). Our findings also support the suggestion of Curtis and White (2002) that training should be included in strategies to solve a health professional’s resistance to change.

However, training was not the only factor applied to promote the use of STGs in Timor-Leste. More importantly, the development of STGs did not rely on a single policy or a single vertical programme. All of the policy areas in the Health Policy Framework, which was developed in the early stage of the health system development, are linked to the development of STGs (MoH Timor-Leste 2002a). Within the Framework, the development of STGs is related to the Basic Package of Services policy and other policies such as health system structure and organization, resource allocation, capacity building of health professionals and medicine supply. In addition, STGs exist across various programmes. Training was planned on the basis of the Basic Package of Services policy (MoH Timor-Leste 2005), and all medicines discussed in training and mentioned

**Box 1** Extracts from Standard Treatment Guidelines contents*

**Acute respiratory tract infections (ARTIs)**

Three points are key to ARTI management: (1) the illness should be clinically classified between categories: upper ARTIs or lower ARTIs (adults); or severe pneumonia, pneumonia or ‘no pneumonia’ (children); (2) an antibiotic is needed for lower ARTIs and pneumonia; (3) no antibiotic is recommended for most types of upper ARTIs and ‘no pneumonia’.

**Malaria**

Both the clinical nurse training textbook for malaria and IMCI chart-book are based on the National Protocol of Malaria Management. Malaria management where a blood smear test was not available (in most Level 2 CHCs) is based on clinical decision. Treatment for clinically suspected malaria patients needs to cover both *P. falciparum* and *P. vivax*, which are reported to be equally present in Timor-Leste. Giving chloroquine and sulfadoxine + pyrimethamine (Fansidar) at the same time for a clinically suspected malaria patient is recommended.

**Diarrhoea**

For diarrhoeal patient management, two kinds of classification are recommended: severity of dehydration (mild dehydration, moderate dehydration and severe dehydration) and type of diarrhoea (acute diarrhoea without bloody stool, dysentery and persistent diarrhoea). Key recommendations for diarrhoeal patient management are as follows: (1) acute diarrhoeal patients without bloody stools with moderate or milder dehydration should be orally rehydrated and do not need an antibiotic; (2) antibiotic therapy is only recommended for dysentery; (3) treatment for persistent diarrhoea is based on the possible cause: diet for children with malnutrition, anti-helmintic for suspected parasitosis and metronidazole for suspected giardiasis.

**Antibiotics**

Fourteen kinds of antibiotic, ten oral forms and four injections are listed in the Timor-Leste essential medicines list for the Level 1–2 facility. Injections, which are principally for emergency use before referring patients with a serious condition to the upper level facility, are indicated ‘E’ in the list.

**Vitamins**

In the essential medicines list for the Level 1–2 facility, only vitamin A and multivitamins are listed in the ‘vitamins and mineral’ section and folic acid in the ‘anti-anaemia medicines’ section. Clinical indications of these medicines in Timor-Leste’s STGs are limited. The STGs for the three target diseases of this study (ARTIs, malaria and diarrhoea) do not recommend a vitamin prescription.

*Summarized by the authors, based on the clinical nurse textbooks, IMCI chart-book, the National Protocol of Malaria Management, the National Tuberculosis Control Programme and the national essential medicines list, which were available when data were collected in 2006. Note that some of them have already been revised.
in the STGs are listed in the national essential medicines list. Timor-Leste’s essential medicines list categorizes medicines according to the facility level and emphasizes the relationship among this list, training and STGs (MoH Timor-Leste 2004). Nurses/midwives understood in the study interviews that only a few injections were really needed. In addition, the quantitative element of the original research showed a low percentage of injection prescriptions (Higuchi 2008). These findings are believed to be the result of a combination of multiple concurrent interventions, which are interconnected, such as STGs, training, the national essential medicines list, the referral system and the procurement system.

In relation to the aforementioned point, it was crucial in the Timor-Leste experience that instructions in the STGs could be put into practice where human and material resources were limited. The STGs indicate case management without very sophisticated medical equipment, which is difficult to deal with and to maintain. It should be noted that only few difficulties in the use of the STGs were mentioned by the respondents in this study. The understandable and manageable nature of the STGs’ contents led to the nurses/midwives’ acceptance of the policy changes to introduce the STGs and consequent changes in daily practice, and further, resulted in their positive perception of these changes. The development and introduction of STGs in a policy framework, which reflected the local needs and reality, is considered to influence the application of STGs in practice.

Conclusion
The experience during the rehabilitation and the early development phase in Timor-Leste indicates the value of STGs for non-physician health care providers at the PHC level. Changes brought about by the introduction of STGs were positively perceived, and STGs were applied by frontline health care providers in rural areas with few difficulties, contrary to previous knowledge from studies of physicians in the Western world. Development of STGs in a health policy framework was a key factor for integrating related policies and programmes, including training programmes. Although Timor-Leste now has foreign doctors at the sub-district level, the findings of this study are transferable to other resource-limited communities.

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Conflict of interest
None declared.

Endnote
1 After obtaining approval for the research by the Timor-Leste’s MoH and finishing the pilot project, a massive deployment of Cuban medical doctors was announced at the end of 2005, just before starting the data collection of this study. It was planned that the Cuban Doctors Brigade would stay until young Timorese medical students studying at medical schools in Cuba graduated, and Cuban doctors started to be posted in every CHC. Although the situation of the research site was changing, we decided, after several discussions and consultations with relevant sections and experts, to retain the original study objectives to focus on Timorese non-physician health professionals in this study.

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