

The impact of a clinical training unit on integrated child health care in Mexico

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This study had two aims: to describe the activities of a clinical training unit set up for the integrated management of sick children, and to evaluate the impact of the unit after its first four years of operation. The training unit was set up in the outpatient ward of a government hospital and was staffed by a paediatrician, a family medicine physician, two nurses and a nutritionist. The staff kept a computerized database for all patients seen and they were supervised once a month.

During the first three years, the demand for first-time medical consultation increased by 477% for acute respiratory infections (ARI) and 134% for acute diarrhoea (AD), with an average annual increase of demand for medical care of 125%. Eighty-nine per cent of mothers who took their child for consultation and 85% of mothers who lived in the catchment area and had a deceased child received training on how to recognize alarming signs in a sick child. Fifty-eight per cent of these mothers were evaluated as being properly trained.

Eighty-five per cent of primary care physicians who worked for government institutions ($n=350$) and 45% of private physicians ($n=90$) were also trained in the recognition and proper management of AD and ARI. ARI mortality in children under 1 year of age in the catchment area (which included about 25 000 children under 5 years of age) decreased by 43.2% in three years, while mortality in children under 5 years of age decreased by 38.8%. The corresponding figures for AD mortality reduction were 36.3% and 33.6%.

In this same period, 11 clinical research protocols were written. In summary, we learned that a clinical training unit for integrated child care management was an excellent way to offer in-service training for primary health care physicians.

Keywords Delivery of health care, Integrated; Pediatrics/education; Clinical medicine/education; Hospitals, Teaching; Models, Educational; Mexico (*source: MeSH*).

Mots clés Distribution intégrée soins; Pédiatrie/enseignement; Médecine clinique/enseignement; Centre hospitalier universitaire; Modèle éducatif; Mexique (*source: INSERM*).

Palabras clave Entrega integrada de atención de salud; Pediatría/educación; Medicina clínica/educación; Hospitales escuela; Modelos educacionales; México (*fuentes: BIREME*).

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Voir page 440 le résumé en français. En la página 440 figura un resumen en español.

Introduction

Medical students are usually trained in clinical settings (1). Since the early part of this century, as specialties become increasingly important, medical residency has been the preferred mode of training. As a

consequence, physicians in training are exposed mainly to hospital-based diseases and only to a lesser degree to the needs of their patients outside the hospital. Even physicians who choose practices such as paediatrics, obstetrics, internal medicine and family medicine receive most, if not all, of their training in hospitals. However, most diseases are not hospital-based. On completing their medical studies, physicians are well trained to treat diseases that require hospitalization and they feel comfortable managing inpatients, but they feel uneasy treating the most common diseases, which should be managed at the primary health care level. The medical profession is thus faced with a dilemma: there are specialists to treat all sorts of rare diseases, but there are no

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specialists to treat the most common ones. This bias towards hospital-based training is probably a major cause of bad quality primary health care practices (2).

For example, the most common diseases in childhood are acute respiratory infections (ARI) and acute diarrhoea (AD). As physicians have been trained to "do something", they often prescribe an antibiotic or other drugs for these cases, but forget to talk to the mother, to explain why the disease occurred, to listen to her worries, or spot risk factors that could make the case worse (3).

Such cases are found in Mexico. Verbal autopsies carried out by our group showed that 60% of deceased children who died from either of these two diseases died in their homes. This was despite the fact that 90% of them were seen by a physician, in most cases 24–48 hours before their death (4, 5).

Therefore, there is great need to find effective strategies to train physicians in primary health care. Soumerai et al. reviewed different strategies that have been used, concluding that all of them had some impact on improving the quality of health care (6). We have used several of these strategies, combining guided literature review, analysis of prescribing practices prior to the interview, and use of treatment algorithms, group discussions, and peer review committees. This intervention changed prescribing practices of about 50% of the participating physicians, and was sustained for up to 18 months after the intervention (7). However, this intervention focused mainly on changing prescribing practices; at that time, no attention was paid to teaching mothers. So its impact was limited.

We believe that a different model, which may have a greater impact, should be based in a hospital setting, resembling the way in which physicians have been trained throughout their medical education. For this to occur, there should be primary health care facilities in which high-quality medical care is provided.

Along these lines, oral rehydration units were promoted by WHO as a strategy to reduce infant diarrhoea mortality rates (8). These units not only provided medical care to sick children, they also helped train physicians in using this form of highly successful therapy (9). The oral rehydration unit model was further enriched by adding activities focused on the treatment of children with ARI. This model evolved into the concept of integrated management for the sick child, promoted by WHO (10). Integrated management has now been included as part of the health care sector's policy in various countries. In Mexico, it includes prevention or treatment of malnutrition, updating the vaccination record, adequate treatment for children with acute diarrhoea or ARI, identification of factors of a bad prognosis for the sick child whose mother demands closer supervision and more intensive training, and activities to promote the mother's health (11).

The objective of the present paper was to describe the activities carried out in a clinical training unit for the integrated management of the sick child and to evaluate the impact of the unit after four years

of operation. Changes in physicians' prescribing practices have been presented elsewhere (9).

Methods

Setting

The study was carried out in the state of Tlaxcala, Mexico. This state is located in the central highland plateau of the country, which has a mean altitude over 2000 m above sea level. In 1991, when the study began, the state of Tlaxcala had the highest infant mortality rate in the country: 35.3 per 1000 live births (12). The two most important contributing causes to infant mortality were diarrhoea and acute respiratory infections. In contrast to the situation common in other developing countries, malaria was not present in this area, owing to the altitude.

Clinical unit

Physical area. The clinical training unit was established in the outpatient ward of the General Hospital of the Ministry of Health in the capital city of Tlaxcala, in an area previously assigned to an oral rehydration unit. The clinical training unit consisted of a single office with enough space for the mother and the sick child, a nurse, the physician in charge, plus 4–5 trainees. The office was equipped with a desk, chairs, a clinical bed, and a weighing scale. As the main focus of the clinical care and training was on the integrated management for the sick child, several wall charts showed the proper care for acute diarrhoea, acute respiratory infections, nutritional management, and a vaccination scheme for children under 5 years of age. Next to the office was a second room, for short-term hospitalization. This room had four beds with access to oxygen masks or croupettes, a wash basin, and a round table for discussions with mothers and health workers. The room also had audiovisual aids such as wall charts and a videocassette recorder with a large-screen television.

Staff. Clinical care and training during the morning shift were provided by a paediatrician and a family medicine physician. Both had been specifically trained for these functions. During the afternoon and evening shift, as well as on holidays, the ward was in charge of physicians in their last year of clinical training who had been trained by the morning staff. Each of the three shifts had support from two nurses, one assigned to the outpatient office and the other to the inpatient room. These nurses had received specific training to teach mothers. During the morning shift there was also a nutritionist who carried out specific activities, to be described. Mothers of children seen during the afternoon or evening shifts, or during weekends or holidays, were asked to come back to the unit on the morning of the next working day to receive training.

Activities. The staff carried out medical care, teaching and research activities, as summarized in Tables 1 and 2. Clinical activities included: medical care for patients with AD or ARI; vaccination

Table 1. Description of activities carried out in the Training and Teaching Unit I

| Medical care activities | Specific services and actions |
|---|--|
| Medical care for children with ARI or AD who were brought to the clinic or were referred from primary health care posts because they had bad prognosis factors. | <ul style="list-style-type: none"> • Free medical care, 24 hours per day, all year round. • Medical care by well-trained health care personnel. • Application of WHO and national ARI and AD programme diagnostic and therapeutic guides. • All children were asked to return for follow-up 48–72 hours later. • Individual follow-up for all children with risk factors who did not come back to the consultation. |
| Vaccination for children with incomplete vaccination scheme. | <ul style="list-style-type: none"> • Identification of children with incomplete vaccination schemes, either through asking the mother or by reviewing their vaccination record. • Vaccination of the child until the scheme was completed, with follow-up visits at home when the mother did not return on the scheduled date. |
| Identification and rehabilitation of malnourished children whose parents demanded care at the clinic or who were referred from primary health care posts. | <ul style="list-style-type: none"> • Height and weight measurements for all children seen at the unit. • Referral to the nutrition rehabilitation centre of every child with moderate or severe weight-for-age deficit. • Nutrition rehabilitation included six 4-hour sessions, during which a nurse or a nutritionist taught mothers how to prepare proper food for her child, through a hands-on workshop. During these sessions, the trainers emphasized the importance of proper weaning after the 4th month of life, incorporating the child to the family's diet by the 9th month of life. |

activities for all children seen at the unit; nutrition diagnosis and rehabilitation for all children seen as outpatients. Training and research activities included: teaching mothers of sick children about prevention and home care for children with AD or ARI; training for all physicians and health personnel (both institution-based and in private practice) involved in primary health care in the hospital's area of influence (12); periodic analysis of mortality due to AD or ARI in the hospital's area of influence; development of research protocols tailored to the unit health service needs. All these activities except the last two followed the guidelines of WHO's Integrated Management of Childhood Illness and of the Mexican Ministry of Health's Programme for Care of the Sick Child (8, 10, 11).

Database. Records were kept for every patient seen at the unit. A computerized database allowed the staff to print out monthly reports on the number of patients seen, community of residence, number and frequency of follow-up visits, frequency of referral to the unit due to identification of factors of bad prognosis, relevant clinical data, hydration status of the child with AD, presence or absence of pneumonia in children with ARI, diagnosis, treatment prescribed, use of antibiotics, frequency of hospitalization, vaccines applied, nutritional status according to anthropometric data, and mortality.

Supervision scheme. The previous reports were checked once a month by one of the investigators,

who used them to give feedback to the clinical staff. During the monthly visits, a medical supervisor also checked on the quality of care offered at both the outpatient and the inpatient wards. The availability of vaccines and medical supplies was also checked every month and corrected as needed, as was the functioning of the nutrition rehabilitation activities.

Evaluation criteria. Evaluations were made of clinical, training and research activities and of mortality data.

Clinical activities were evaluated on the basis of productivity, quality of health care, vaccination coverage, and nutrition rehabilitation. The period was 1992–95, with 12-month cuts. Productivity included the yearly average increase in demand for medical care, percentage of subsequent consultations, and percentage of children with bad prognosis signs who had been referred from units in the catchment area. Quality of health care was evaluated using as indicators the percentage of antimicrobial drugs for AD and ARI, percentage of cases which required hospitalization, and disease-specific lethality. Vaccination coverage included the percentage of identification of incomplete vaccination schemes and the percentage of children whose vaccination scheme was completed at the unit. Nutrition rehabilitation was evaluated on the basis of the percentage of mothers of malnourished children who improved their feeding practices after receiving training on proper food preparation for their children, and percentage of severely malnourished children (–2 weight-for-age Z-score) who recovered. A detailed description of the methodology followed to train mothers in nutrition management of their sick children and its impact will be published elsewhere.

The indicators for training activities included: percentage of mothers who received training out of all mothers who demanded care; percentage of mothers who received training out of all mothers who had a previous infant death; percentage of mothers who carried out correctly specific child care activities at home out of all mothers who were trained; percentage of physicians working for the government who showed adequate clinical practice after receiving clinical training; and percentage of physicians in private practice who showed adequate clinical practice after receiving clinical training. To evaluate behavioural changes in the ways mothers and physicians treated children after they had received training at the unit, a group of field nurses visited a randomly selected sample of mothers' homes and physicians' offices. During these visits, the nurses administered a detailed questionnaire to mothers and a visual checklist to physicians.

Indicators for research activities included number of research protocols written, number of projects finished, and number of projects that had results that were actually applied in the unit.

The analysis of mortality data was done calculating annual mortality rates in children under 5 years of age for AD and ARI. We also evaluated the percentage of verbal autopsies that were carried out for all children who died of AD or ARI in the hospital's

catchment area. Lastly, we calculated the percentage of specific actions that were implemented after the recommendations that emerged from the analysis of verbal autopsies.

Results

After the clinical training unit was created, the demand for first-time medical consultations for ARI increased from 634 in 1992 to 3029 in 1995 (a 477% increase). Demand for AD cases increased from 349 in 1992 to 851 in 1995 (a 134% increase). The average increase in demand for medical care was 125% per year. Half the patients seen for the first time returned for follow-up visits, and 1 out of 6 patients seen in the clinic were referred from other units because one or more bad prognosis factors had been identified (Table 3).

Quality of medical care was considered adequate, based on the findings that only 28.5% of patients with ARI and 11.0% of those with AD received antimicrobial drugs, adequately prescribed; only 7.6% of patients with ARI and 2.9% patients with AD required hospitalization; and lethality in ARI was only 0.06% and in AD cases 0.04% (Table 3).

Eleven per cent of children had an incomplete vaccination scheme, according to their age, and 100% of them received the vaccines required to update their scheme (Table 3). Five hundred and eight children with malnutrition were identified, and 95% of their mothers improved feeding practices after receiving nutrition rehabilitation training. Fifty-four per cent of children with second and third degree malnutrition improved their nutritional status (i.e., moved to first degree malnutrition or normal state; see Table 3).

Eighty-nine per cent of mothers who brought their child for consultation and 84% of mothers who had a child who died in the centre's catchment area received training on how to recognize alarming signs in their sick child. Fifty-eight per cent of these mothers were considered properly trained (Table 4). Eighty-five per cent of physicians working for government institutions ($n = 350$) and 45% of private physicians ($n = 90$) were also trained in the recognition and management of AD and ARI (Table 4).

ARI mortality in children under 1 year of age in the catchment area of the unit, which included about 25 000 children under 5 years of age, decreased by 43.2% between 1991 and 1993 (9.63 to 5.42 x 1000 live births, respectively). Mortality in children under 5 years of age decreased by 38.8% in this same period (2.68 to 1.64 x 100 000 children under 5 years of age, respectively). AD mortality in children under 1 year of age in the catchment area decreased by 36.3% (4.60 to 2.93 x 1000 live births, respectively), and AD mortality in children under 5 years of age decreased in the same period by 33.6% (1.43 to 0.95 x 100 000 children in this age group, respectively; see Table 4).

Table 2. Description of activities carried out in the Training and Teaching Unit II

| Medical care activities | Specific services and actions |
|--|---|
| Training for mothers on prevention and treatment of ARI and AD cases in the home and identification of danger signs. | <ul style="list-style-type: none"> • "Complete consultation" with active and practical training for mothers. • Verification of questions asked to mothers after the consultation. • Training to all mothers, with special emphasis on those who had a previous child death in the unit's catchment area. |
| Training for physicians and health care personnel in the unit's catchment area. | <ul style="list-style-type: none"> • In-service training courses, 5 days long, 7 hours per day, with a maximum of 6 students per course. • The course was based on critical discussion of medical care for each child, complemented with analysis of literature published on the topic, discussion of diagnostic-therapeutic algorithms, previously designed, and in-service training. • A course was given every 2 weeks, which included pre- and post evaluations. |
| Analysis of mortality and of the disease-health-seeking-death process. | <ul style="list-style-type: none"> • Calculation of annual mortality rates for ARI and AD in children under 1 year of age and under 5 years of age, using the number of children who lived in the catchment area as denominator. • Verbal autopsies applied to mothers or caregivers of children who died of ARI or AD in the unit's catchment area. • Analysis of verbal autopsies by a mortality committee, identifying the underlying problems that were associated with the death, followed by specific recommendations to solve these problems. |
| Development of research projects that would give feedback to improve the unit's work. | <ul style="list-style-type: none"> • Identifying and ranking problems that could be the subject of research protocols. • Specific projects were ascribed to the health care personnel. • The projects received technical and methodological consultation. • Results were publicized by means of executive synthesis and research articles in local and international journals. |

Ninety per cent of deceased cases were followed up with a verbal autopsy, and 95% of these were analysed at the training unit. In 75% of cases, there was a specific action that followed as a result of these analyses (Table 4). In the period evaluated, 11 clinical research projects were written, of which 5 were published, and 3 had results that were directly applied in the unit (Table 4).

Discussion

The successful results presented here came about only after a long preparation period in which the authorities had to be convinced of the need of establishing the centre; the future staff was identified, motivated, and trained; the required equipment was bought; an adequate place to locate the centre was identified within the hospital premises, using the

Table 3. Main results obtained through the Training and Research Unit's activities

| Main achievements | % |
|---|-------|
| Productivity | |
| Increase in the demand of medical care (annual average) | 125.0 |
| Follow-up visits | 55.4 |
| Referrals from other centres because of bad prognosis factors | 15.2 |
| Medical care with adequate quality | |
| Antimicrobial drugs prescribed for ARI cases | 28.5 |
| Antimicrobial drugs prescribed for AD cases | 11.1 |
| Children hospitalized with ARI | 7.6 |
| Children hospitalized with AD | 2.9 |
| Lethality of ARI | 0.06 |
| Lethality of AD | 0.04 |
| Vaccination coverage | |
| Children identified with incomplete medical scheme for their age | 11.7 |
| Children who received all the vaccines required to update their scheme | 100.0 |
| Nutrition rehabilitation | |
| Mothers of malnourished children who improved their feeding practices ($n = 508$) | 95.2 |
| Children with 2nd- or 3rd-degree malnutrition who recovered ($n = 248$) | 54.4 |

Table 4. Main teaching and research achievements of the medical training unit during its first 4 years of operation

| Main achievements | % |
|--|----------|
| Training | |
| Mothers of children who asked for consultation and received training | 88.9 |
| Mothers of children who died of ARI or AD in the unit's catchment area | 83.9 |
| Mothers properly trained ^a | 58.0 |
| Physicians working in government facilities who were properly trained ^a ($n = 350$) | 85.0 |
| Private physicians who were properly trained ^a ($n = 90$) | 45.0 |
| Mortality rates | |
| Reduction in ARI under 1 year of age ^b : 1991 = 9.63, 1993 = 5.42 | 43.2 |
| Reduction in ARI under 5 years of age ^c : 1991 = 2.68, 1993 = 1.64 | 38.8 |
| Reduction in AD under 1 year of age ^b : 1991 = 4.60, 1993 = 2.93 | 36.3 |
| Reduction in AD under 5 years of age ^c : 1991 = 1.43, 1993 = 0.95 | 33.6 |
| Analysis of the disease–health-seeking–death process | |
| Verbal autopsies to children who died in the catchment area ($n = 24$) | 90.0 |
| Verbal autopsies analysed in the training unit | 95.0 |
| Specific actions taken as a consequence of the previous analyses | 75.0 |
| Research | |
| Protocols written | $n = 11$ |
| Projects finished and results publicized | $n = 5$ |
| Results from research projects applied in the unit | $n = 3$ |

^a Properly trained indicates that the next case of a child with ARI or AD who received care by the mother at home or by the physician in his or her office was considered adequately managed or treated.

^b per 1000 live births.

^c per 100 000 children under 5 years of age.

space occupied previously by an underutilized oral rehydration unit; the functions of the centre were defined; and the required supervision scheme was devised and assigned to the investigators involved. In

the end, though, a primary health care centre was established in which excellent medical care was provided, and this health care centre trained not only the health care personnel of its catchment area (including physicians, nurses and other health professionals), but also mothers (13). In this way, we assured the provision of high-quality health care services, available for the population to use (14).

The results of the evaluation we present in this paper may be biased by the fact that it was conducted by internal evaluators. While some authors have argued that using internal evaluators should be questioned, as they are part of the authority structure and may thus be simultaneously playing the roles of judge and judged, others have maintained that an internal evaluation may actually be more adequate. This is because internal evaluators know the structure they are evaluating, and the feedback provided by their evaluation may have a greater chance of being adopted, as was the case in our study.

Habicht et al. have laid out a useful framework for evaluating public health programmes (14). According to these authors, a public health intervention may be carried out by combining two sets of indicators: the first one refers to a progression from the provision of services (including making them available and accessible to the target population, assuming they are of adequate quality) and their utilization by the intended population, which results in a given coverage, which may be reflected in a predefined impact. The first three indicators reflect the performance of the programme, while the fourth reflects its impact. In turn, each of these indicators may be assessed for its adequacy, in terms of whether the expected changes occur as a result of the intervention or programme; and for its plausibility, in terms of whether the programme seems to have an effect above and beyond other external influences.

Using this framework, the performance of the unit was reflected in the following facts. In relation to provision and utilization of the services, it was clear that the establishment of a high-quality treatment centre met a need for patient care, as we observed an almost immediate increase in the number of consultations, which were held in a seldom-used oral rehydration unit. Mothers who may otherwise have gone to a private physician or elsewhere now demanded consultation in this centre, and they received better care. All of these indicators reflected an adequate performance of the centre (13). Based on our experience, if access to medical care is granted, including the availability of physicians and drugs, this strategy is more useful, and, in the long term, easier than training all physicians (private and public) who care for sick children (7, 13). Further, 15% of consultations were with patients in whom risk factors for a bad outcome had been identified. We would have liked to see a larger percentage of this type of case, which perhaps accounted for as many as 50% of the total. However, most of the demand came from spontaneous attendance which, on the other hand, did not overburden the staff. However, more well-defined strategies would

have been needed to have difficult cases referred to the unit, leaving simple, uncomplicated ones to be cared for by primary health care physicians.

The effectiveness of the unit was assessed by well-defined indicators of the quality of care. For example, the percentage of follow-up visits was 50%. This is hard evidence that even patients who lived in semi-rural areas were willing to come back for a check-up or follow-up visit when asked to do so, thus reflecting the trust they had in the physician. The low percentage of antibiotic drugs used to treat ARI and AD cases is also an indicator that has been used to evaluate quality of care (15, 16). Taking into account the savings represented by a rational use of these drugs, in both economic and ecological (microbiological) terms, we considered this to be another successful result. By the same token, the percentage of patients with ARI and AD who required hospitalization was very low. This should be viewed both as a result of the type of uncomplicated cases usually attending a primary health care unit (with no or mild dehydration in AD cases or with common cold, sore throat or fever in ARI cases — which require no antibiotic use) as well as a reflection of the good quality of care offered at the outpatient level. Limited hospitalizations mean less stress for parents, better use of in-hospital resources, and lower cost; this is an excellent way to teach, in actual practice, how to improve patients' care. Lastly, the low lethality, either in ARI or in AD cases, is an impact indicator that reflects the quality of health care provided (14).

From the point of view of plausibility assessment, we would expect good performance of the centre if changes in physicians' prescribing behaviour appeared as a result of training (14). A complete account of the results of training given to physicians has been given in a different publication (13). The relevant point for this paper is that, if the right strategies are used, even with only a 5-day course (35 working hours), nearly half the physicians can improve their diagnostic and treatment practices. Previous work has shown that when physicians change their treatment practices, these changes will last for up to 18 months (7). In this study, however, nearly half the physicians did not change their treatment practices. We have not yet identified the factors that may facilitate change (17). We hope that future research will shed some light on this.

In relation to mothers' training, our results were also quite good. Nearly 90% of mothers in the unit's catchment area who demanded medical care or who had a child who died because of ARI or AD received adequate training. In up to 58% of these cases we were able to evaluate the mother's care for a sick child during a subsequent episode of illness. The importance of the training that the mother may receive during a regular consultation (lasting about half an hour) cannot be overemphasized. However, in 42% of the mothers we could not assess the effectiveness of the training strategy. Therefore, other approaches have to be devised to reinforce the

messages given during the consultation. Possibilities include spending more time with the mother or creating different training strategies. We have received a grant to carry out future research in this area.

Over the past few years, WHO and UNICEF have stressed the need for integrated management of the sick child (18). It is not enough to provide good quality care for the disease that brings about the consultation. In our unit, we were especially careful to identify all children who had an incomplete vaccination record — 12% of cases — and to update it, which was done in 100% of cases. This was done despite the common practice of not vaccinating a child who is ill.

Likewise, recognizing the well-known relationship between malnutrition and infection, we were especially careful to screen for malnutrition in the sick child. These children were referred to a nutrition rehabilitation centre, also run by staff from the unit, in which mothers actively participated in training sessions to prepare and feed these children. Up to 95% of mothers improved their feeding practices after participating in these workshops, and 54% of children with severe malnutrition improved their nutritional status (19).

It is also important to identify risk factors for a bad prognosis. Children who had any of these risk factors received more careful treatment. In some cases, this was reason enough to hospitalize the child or, in less extreme cases, to ask the mother to come back for follow-up in the short term, or before if any alarm sign was present. In retrospect, there are two other things we would have liked to do. The first is to assess the influence of the child's microenvironment, at the family level, because of the recognized influence of such factors as drug abuse, alcoholism, extreme poverty and the like on the child's health. Even though it is difficult to change these risk factors in the context of a medical consultation, the physician should identify them and address them as best he or she can. The second is to assess the mother's health. It is very difficult to find a healthy child with a sick mother. For example, an anaemic mother will probably rear an anaemic child; a mother who does not know the need for regular Pap tests will be very likely to ignore the need to keep her child's immunization schedule up to date. However, these caveats would not affect our conclusions, as we used a concurrent control, as opposed to an historical control, which could have been affected by secular changes in ARI mortality (14).

Another key point of this study relates to the research activities that were embedded in the way the unit was conceived and run. During the four-year period we evaluated, 11 research projects were written; 5 were completed during this period, and the results of 3 of them were applied directly in everyday activities of the unit (20–22). Thus, even when the medical care burden is heavy, research activities are a good way to motivate the staff. Research helps us to evaluate the impact of activities

in the centre, avoid monotony, and motivate staff to be more efficient.

There was a 30–40% reduction in mortality of children under 5 years old living in the unit's catchment area. Although this reduction may have been due to several factors that affected the general well-being of the population, like improvements in the quality of life, improvements in economic income, or specific health-related activities promoted and carried out by the Ministry of Health, we may also assume that

the training provided to physicians and their adequate performance on the follow-up evaluation may have played a part in the success of the intervention over child mortality. In order to evaluate this, we are undertaking analyses that compare mortality in the unit's catchment area with nearby areas that were not directly influenced by our activities (23). ■

Conflicts of interest: none declared.

Résumé

Impact d'une unité de formation clinique sur la prise en charge intégrée de l'enfant malade au Mexique

L'étude avait un double but : décrire les activités d'une unité de formation clinique créée pour la prise en charge intégrée de l'enfant malade, et évaluer son impact au bout de quatre années de fonctionnement. L'unité de formation était installée dans le service de soins ambulatoires d'un hôpital public et comptait un pédiatre, un médecin généraliste, deux infirmières et un nutritionniste. Le personnel tenait une base de données informatisée pour tous les patients vus et était supervisé une fois par mois.

Pendant les trois premières années, les demandes de première consultation médicale ont augmenté de 477 % pour les infections respiratoires aiguës (IRA) et de 134 % pour la diarrhée aiguë (DA), avec une augmentation annuelle moyenne de la demande de soins médicaux de 125 %. Au total, 89 % des mères ayant amené leur enfant pour consultation et 85 % des mères habitant la zone desservie par l'hôpital et dont un enfant était déjà décédé ont reçu une formation sur la façon de reconnaître les signes d'alarme chez un enfant malade.

L'évaluation a montré que 58 % de ces mères avaient été correctement formées.

Une formation à la reconnaissance et à la prise en charge correcte de la DA et des IRA a également été dispensée à 85 % des médecins en soins de santé primaires travaillant dans les établissements publics (n = 350) et à 45 % des médecins du secteur privé (n = 90). La mortalité par IRA chez les enfants de moins d'un an appartenant à la zone desservie (qui comptait environ 25 000 enfants de moins de cinq ans) a baissé de 43,2 % en trois ans, tandis que la mortalité chez les enfants de moins de cinq ans baissait de 38,8 %. Les chiffres correspondants pour la réduction de la mortalité par DA étaient de 36,3 % et 33,6 %.

Pendant cette même période, 11 protocoles de recherche clinique ont été rédigés. En résumé, cette étude nous a appris qu'une unité de formation clinique pour la prise en charge intégrée de l'enfant malade était un excellent moyen d'offrir une formation en cours d'emploi aux médecins en soins de santé primaires.

Resumen

Efectos de una unidad de formación clínica en la atención infantil integrada en México

Este estudio se planteó con dos objetivos: describir las actividades de una unidad de formación clínica destinada a tratar de forma integrada a los niños enfermos, y evaluar el impacto de esa unidad tras sus primeros cuatro años de funcionamiento. La unidad se estableció en la sala de pacientes ambulatorios de un hospital público y estaba compuesta por un pediatra, un médico de familia, dos enfermeras y un nutricionista. El personal mantenía una base de datos computarizada para todos los pacientes examinados, y era supervisado una vez al mes.

Durante los tres primeros años, la demanda de primeras consultas médicas aumentó en un 477% para las infecciones respiratorias agudas (IRA) y en un 134% para la diarrea aguda, elevándose el aumento anual promedio de la demanda de atención médica al 125%. El 89% de las madres que llevaron a su niño a la consulta y el 85% de las madres que vivían en el área de captación y habían perdido un hijo recibieron formación sobre la manera de reconocer los signos de alarma en un niño

enfermo. La evaluación de esas madres reveló que el 85% de ellas estaban bien adiestradas para ello.

El 85% de los médicos de atención primaria que trabajaban para instituciones públicas (n=350) y el 45% de los médicos privados (n=90) recibieron también formación para reconocer y tratar correctamente la diarrea aguda y las IRA. La mortalidad por IRA entre los menores de un año en el área de captación (que comprendía unos 25 000 niños menores de cinco años) disminuyó en un 43,2% a lo largo de tres años, mientras que la mortalidad de menores de cinco años se redujo en un 38,8%. Las cifras correspondientes para la reducción de la mortalidad por diarrea aguda fueron del 36,3% y el 33,6%.

En ese mismo periodo se elaboraron 11 protocolos de investigación clínica. En resumen, comprobamos que la creación de una unidad de formación clínica para el tratamiento integrado de los niños constituía una medida excelente para ofrecer formación en el servicio a los médicos de atención primaria.

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