Management of acute respiratory infections by community health volunteers: experience of Bangladesh Rural Advancement Committee (BRAC)

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Objective To assess the role of management practices for acute respiratory infections (ARIs) in improving the competency of community health volunteers in diagnosing and treating acute respiratory infections among children.

Methods Data were collected by a group of research physicians who observed the performance of a sample of 120 health volunteers in 10 sub-districts in Bangladesh in which Bangladesh Rural Advancement Committee (BRAC) had run a community-based ARI control programme since mid-1992. Standardized tests were conducted until the 95% interphysician reliability on the observation of clinical examination was achieved.

Findings The sensitivity, specificity, and overall agreement rates in diagnosing and treating ARIs were significantly higher among the health volunteers who had basic training and were supervised routinely than among those who had not.

Conclusion Diagnosis and treatment of ARIs at the household level in developing countries are possible if intensive basic training and the close supervision of service providers are ensured.

Keywords Respiratory tract infections/diagnosis/therapy; Acute disease; Child; Voluntary workers/education; Community health aides/education; Task performance and analysis; Sensitivity and specificity; Pakistan (*source: MeSH, NLM*).

Mots clés Voies aériennes supérieures, Infection/diagnostic/thérapeutique; Maladie aiguë; Enfant; Travailleur bénévole/enseignement; Auxiliaire santé publique/enseignement; Analyse performance; Sensibilité et spécificité (Epidémiologie); Pakistan (*source: MeSH, INSERM*).

Palabras clave Infecciones del tracto respiratorio/diagnóstico/terapia; Enfermedad aguda; Niño; Trabajadores voluntarios/educación; Auxiliares de salud comunitaria/educación; Análisis del desempeño de tareas; Sensibilidad y especificidad; Pakistan (*fuente: DeCS, BIREME*).

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Introduction

Acute respiratory infections (ARIs) are recognized widely as the leading cause of mortality among children in most developing countries (*1–5*). Poverty, overcrowding, air pollution, malnutrition, harmful traditional practices, and delayed and inappropriate case management are reasons for high case fatality rates from such infections (*6–8*). In the mid-1980s, WHO initiated a control programme for ARIs that focused on cases managed by health workers (*4, 9*). Simple case management procedures have been designed for diagnosis and treatment of such infections in situations without any laboratory and radiological facilities (*10*). Studies reported that mortality in children due to ARIs could be reduced by one-half if early detection and appropriate treatment could be provided (*2, 11*). If fast breathing and chest in-drawing were recognized timely, most deaths from ARIs could be averted where appropriate services were available (*4*). Not many countries were able to launch and implement such a programme, however, although the United Nations Children's Fund set a target of a 33% reduction in child deaths caused by ARIs by the year 2000 (*12*).

Bangladesh has a high case fatality rate from ARIs — nearly 400 deaths of children each day (*13*). The prevalence of respiratory illnesses among children aged <3 years declined from 24% to 15% over the period 1994–97 in Bangladesh (*14*). Many factors might have contributed to such a rapid decline. For example, coverage of vitamin A supplementation (in which the vitamin is given to all children aged <6 years twice a year) increased from 49% to 68%, while the use of health facilities by children with cough and difficult breathing increased from 28% to 36%. There was also a modest increase in child immunization and the adoption of an ARI control programme by the Government of Bangladesh (*14*).

The Bangladesh Rural Advancement Committee (BRAC), a non-government development organization, tried to develop a simple and sustainable approach to managing ARIs in children in line with WHO guidelines (*15*). BRAC assumed that community health volunteers could be used effectively to identify, diagnose, and treat ARIs at the grass roots level if they were provided with necessary training and their performance was supervised routinely by a para-professional from BRAC (*15*). The main theme of the strategy was that volunteers visited each household in their community

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to identify and diagnose ARIs among children by using simple signs and symptoms. The volunteers were expected to be able to diagnose and treat minor cases of such infections at the households and to refer severe and very severe cases to clinics and hospitals.

Early studies identified a number of deficiencies in the fieldworker-based ARI programme in Bangladesh (*13, 16*). BRAC therefore evaluated its own ARI control programme with financial assistance from the committee's donors. The present paper reports the results of an assessment of the effects of basic training and supervision on the performance of community health volunteers in diagnosing and treating ARIs among children.

Materials and methods

The BRAC control programme for ARIs

The ARI control programme launched by BRAC in 1992 focused on the community-based education, detection, and control of such infections (*15*). The aim was to reduce mortality and severity of complications from ARIs among children aged <5 years. It was assumed that educating caregivers in how to identify the signs of such infections would be possible even in societies where modern medical beliefs and practices were largely absent (*17*). We found that if only fast breathing and chest in-drawing were identified in a timely way, most deaths from ARIs could be averted where appropriate services were available (*18*).

BRAC used community health volunteers as the front-line workforce at the grass roots level. The health volunteers were expected to detect cases and treat ARIs, but to refer severe and complicated cases to nearby health clinics. The community health volunteers were selected from among the local area: most had only 5 years of schooling. After recruitment, the volunteers underwent extensive three-day basic training in BRAC's offices with a group of physicians and para-professionals with experience in managing and treating ARIs. The basic training included classroom discussion and practice in the field. Covered were the basic anatomy and physiology of respiratory organs, classification of ARIs, analysis of the causes and factors that contribute to these infections, signs and symptoms of pneumonia, examination of pneumonia cases, counting respiration rate, advice on patient care, use of referral card, target group identification, and record keeping.

Each volunteer was assigned 100–120 households near to their home. Volunteers visited their assigned households monthly to identify, diagnose, and treat children with ARIs. Once patients were identified and diagnosed, the volunteers provided treatment where required. The volunteers were asked to refer children to nearby clinics if the illness was severe or persisted for more than three days.

Paramedics from BRAC provided routine refresher training to volunteers once a month. Health volunteers who dropped out of the programme were replaced by new volunteers recruited from the community. Often it was not possible to organize 3-day formal basic training for new volunteers, so every month a special training day for new volunteers was organized in which most topics of the basic training were taught. The basic training continued for 3–4 months. The supervisors were usually paramedics with extensive field experience in providing basic health services in BRAC health clinics and were expected to monitor routinely the performance of volunteers by re-examining selected patients with ARIs. An ideal supervisor was expected to visit their volunteers once a month, to discuss problems with volunteers, and to provide suggestions for diagnosing and treating patients.

Research design

BRAC began its community-based ARI control programme as a pilot project in ten sub-districts in the northern and central regions of Bangladesh, which covered a population of 2.4 million. This study covered all sub-districts in which BRAC had such a control programme. According to the official statistics, nearly 2500 community health volunteers — all of whom were women — were involved in BRAC's ARI programme at the time of study (*15*). It was considered appropriate, therefore, to conduct this study in areas in which a BRAC programme was running. Each sub-district consisted of several unions (lowest administrative unit in the rural area) and municipalities. All rural unions were included in the study, but urban areas in the sub-districts were excluded. One community health volunteer from each (rural) union was selected at random. In total, a sample of 120 community health volunteers was selected as being adequate to assess volunteers' performance. Five research physicians who had knowledge and skills in standard case management of ARIs using WHO guidelines were recruited and trained in case management of such infections in a specialized child hospital for one week. The training comprised exercises, role play, and field practice. The research physicians conducted several field practices with health volunteers in non-sampled villages as part of their training. Standardized reliability tests, in which a group of potentially sick children was examined independently by each physician, were conducted during field practice. The health volunteer's and physician's diagnoses for each sick child were compared. Causes of variations in diagnosis were identified and discussed with the physicians. This process continued until 95% interphysician reliability on observation of clinical examination was achieved. The physician's clinical judgement was considered the gold standard at the time of the study.

The diagnosis and treatment of acute respiratory infections by health volunteers were examined by the BRAC research physicians. Each volunteer was asked to identify and examine about ten potentially sick children to provide a total of 1200 examined children. The physicians visited all assigned households in the sequence in their registers to identify and examine ten sick children. In some cases, the volunteer did not find ten sick children within the assigned households. In total, the volunteers and research physicians examined 1166 children, and the data for these children were analysed for this study.

A checklist based on a modified version of the guidance in the WHO survey manual was designed. All children in the sample were visited by the research team: the health volunteer visited all households in the village to screen potentially sick children and one research physician followed the volunteer. Only children aged 3 months to <60 months were included in the sample. As described, routine case identification was the responsibility of the health volunteers. Children aged <3 months were not included in the analysis because health volunteers were asked to follow a different case management module for neonates (severe and very severe cases were

immediately referred to a clinic). All children with a cold or runny nose were identified for diagnosis and treatment. The health volunteers diagnosed each child by focusing primarily on routine examination of children, looking for convulsions, shrunken eyes, high respiratory counts, noisy breathing, chest in-drawing, and high body temperature. They provided treatment where necessary, which included instructions to mothers about preventative measures and home remedies. The research physician observed and documented the diagnosis of each health volunteer.

On average, it took three days for the health volunteer and research physician to cover a typical village with about 250 households. Ten potentially sick children in each village were selected randomly to be examined by the volunteer. The research physician observed the performance of the volunteer, re-examined the child, and registered the relevant information. The reports were compared to evaluate the performance of the health volunteers. The sick children found during the data collection were either followed up by BRAC physicians or referred to clinics as necessary. The data were collected over the period December 1998 to February 1999.

In assessing the performance of health volunteers, the validity of diagnosis of ARIs and proportion of overall agreement of the volunteer and physician were used as outcome measures in this research. The diagnosis was categorized into very severe, severe, and mild cases. A case was considered very severe if the child was not able to drink, had convulsions, or looked abnormally sleepy; if there was stridor in a calm child; or if the child was severely malnourished. If no sign of a very severe case was identified, but the child had chest in-drawing, the child concerned was diagnosed as having a severe ARI. The case was considered mild if the child had no signs of very severe or severe infection but was considered to have a respiratory rate >40 breaths per minute. Two indicators such as diagnosis and treatment were used. In addition, sensitivity and specificity of volunteer diagnosis were also estimated to assess their performance. Each community health volunteer was expected to be supervised once a month. The supervision was considered regular if routine contact was made between the para-professional and the volunteer, and irregular if otherwise.

The analysis began with a description of the health volunteers and study children. Sensitivity and specificity were calculated through 2×2 contingency tables. The role of basic training and supervision in diagnosing and treating cases of ARI was assessed. Finally, the net effects of basic training, supervision, and their interaction on the volunteers' performance were estimated by logistic regression. Multivariate analyses were performed to control the effects of confounding factors. The logistic model was used because the dependent variables were dichotomous (*19*). It should be noted that the approach followed in this study was cross-sectional, which did not allow us to draw definite conclusions about the contribution of basic training and supervision on the performance of health volunteers.

Results

Table 1 shows the characteristics of the community health volunteers and study children. In total, 1166 children were examined by 120 health volunteers, 68 (56.7%) of whom received three days of intensive basic training to identify, diagnose, and treat cases of ARI. The remaining volunteers received only one day of refresher training each month with all other health volunteers. Although the ARI programme was launched about 80 months before the survey, the median experience time of the volunteers was 64.5 months (interquartile range, 48–84 months). The distribution of the duration of experience indicates that a large proportion of the volunteers joined later in the programme. Overall, 87 (72.5%) health volunteers were supervised routinely and regularly. In total, 653 (56%) sample children were boys and more than one-third were infants. The mean age of the study children was nearly 20 months (range, 3–<60 months) and the median age was 18 months (interquartile range, 8–30 months).

Table 1. **Characteristics of community health volunteers and the study children.** Values are numbers (percentages) unless otherwise specified

Characteristics	Values
Health volunteers (n =120)	
Received basic training	68 (56.7)
Regularly supervised	87 (72.5)
Median (interquartile range) length of experience (months)	64.5 (48–84)
Children	
Sex ratio (male:female) (n = 1166)	56:44
Age (months) (n =1164)	
3–11	397 (34.1)
12–23	317 (27.2)
24–35	225 (19.3)
36–47	136 (11.7)
48–59	88 (7.6)
Median (interquartile range)	18.0 (8–30)

Both the health volunteers and research physicians examined the 1166 study children. Spearman's and Kendall's τ correlation coefficients were estimated to indicate the level of internal consistency. Significant differences in diagnosis were observed between the health volunteers and research physicians (Table 2). The health volunteers identified 221 (18.9%) children as having ARIs of any kind, while the physicians identified 263 (22.6%) children. These differences indicated that the volunteers tended to under-report potential cases. The overlap between health volunteers and research physicians for different classifications suggests that the correct diagnosis of ARIs by volunteers was 12.5% for "very severe" cases and 45.8% for "severe" cases. Overlap was observed for 152 (65.5%) mild cases.

Table 3 shows the validity of the volunteer diagnosis compared with the gold standard physician diagnosis. Overall, the estimated sensitivity of volunteer diagnosis was 67.7%, with the specificity being 95.2%. Reliability estimated by Kendall's τ coefficient was 0.67. The performance of community health volunteers in identifying cases of ARI was high compared with that reported in other studies (*1, 5*).

Table 4 shows estimates of the differences in sensitivity and specificity of the volunteer diagnosis by basic training and supervision. Confidence intervals were estimated to examine the difference in sensitivity and specificity. The sensitivity was significantly higher (71.9%) among those who received training than those who did not (63.2%) (P<0.01). The difference in specificity by training exposure was not statistically significant. The ϕ coefficient for basic training

Table 2. **Proportion of cases of acute respiratory infections as assessed by health volunteers and physicians, by severity.** Values are numbers (percentages)[a]

Diagnosis	Health volunteer	Physician	Agreement
All acute respiratory infections	**221 (18.9)[b]**	**263 (22.6)[b]**	**NA[c]**
Very severe	4 (0.3)	8 (0.7)	1 (12.5)
Severe	20 (1.7)	24 (2.1)	11 (45.8)
Mild	197 (16.9)	231 (19.8)	152 (65.8)
Non-acute respiratory infections	**945 (81.1)**	**903 (77.4)**	**NA**

[a] Number of cases in which the volunteer and physician assessments were in agreement.
[b] The level of internal consistency between the assessments was estimated by rank order correlation coefficients: Spearman's coefficient = 0.65 ($P<0.01$) and Kendall's τ coefficient = 0.66 ($P<0.01$).
[c] NA = not applicable.

Table 3. **Sensitivity and specificity of assessments by volunteers compared with assessments by physicians**

Volunteer diagnosis	Physician assessment	
	Acute respiratory infections[a]	Non-acute respiratory infections[a]
Acute respiratory infections	178 (67.7[b], 62.1–73.4)	43 (4.8[b])
Non-acute respiratory infections	85 (32.3)	860 (95.2, 93.8–96.6)
All infections	263	903

[a] Values in parentheses are percentages and estimated 95% confidence intervals.
[b] Reliability of the measures are estimated by Kendall's τ coefficient = 0.67 and ϕ coefficient = 0.67.

was 0.69 ($P<0.01$). Similarly, sensitivity, and specificity rates were both positively associated with regular supervision, and the ϕ coefficient was 0.79. The difference in specificity between those who received regular supervision and those who did not was smaller than the difference in sensitivity rates.

The overall proportion of agreement between health volunteers and research physicians in diagnosing (89%) and treating (87.2%) sick children seemed to be quite high (Table 5). Correct diagnosis of ARI was significantly higher among volunteers who had received basic training (90.8%) than those who had not (86.1%) ($P<0.01$). Similarly, regular supervision by para-professionals significantly improved the performance of the volunteers in diagnosing ARIs ($P<0.01$).

The net effects of basic training and supervision on the two performance outcomes with respect to diagnosis and treatment were assessed by multivariate analysis, in which the role of confounding variables, such as age and sex of children, were controlled (Table 6). Results of logistic regression analysis on diagnosis of health volunteers (in model 1) indicated that both the basic training and supervision significantly predicted correct diagnosis ($P<0.01$). The length of health volunteers' experience had no association with the correct diagnosis of ARIs. The level of accuracy of diagnosis was higher among older children. The probability of a girl receiving a more accurate diagnosis than a boy was not significant statistically. When the interaction term (training × supervision) was added to the regression equation (in model 2), both the basic training and the interaction term were insignificant at the 5% level; this indicated that health volunteers who received basic training were not necessarily likely to be regularly supervised. The role of regular supervision in increasing correct diagnosis remained significant, with a lower odds ratio in model 1 than in model 2. The probability of older children and girls receiving a more accurate diagnosis than younger children and boys was not statistically significant.

The effects of basic training and regular supervision on treatment by health volunteers were largely similar to the effects on diagnosis. In model 1, basic training increased the proportion of correct treatments to 69%, and regular supervision raised the treatment accuracy to 4.2 times ($P<0.01$) when other variables were controlled. The significance of basic training was lost when the interaction term was added (model 2). Regular supervision, however, remained significant in both models, with a lower odds ratio in model 1 than in model 2. As the goodness-of-fit statistics were almost the same for both models, we used the equation without interaction as our final model. In summary, the diagnosis and treatment were significantly more accurate among the health volunteers who had basic training and were routinely supervised.

Discussion

Contrary to the assumption that the routine screening for cases of ARI at the household level is not affordable for poor countries, we showed that health volunteers could be used effectively to identify and diagnose ARIs at the grass roots level. Although health volunteers had difficulty identifying very severe and severe cases, the performance at the aggregate level

Table 4. **Assessment of acute respiratory infections by health volunteers compared with physicians by training and supervision**

Health volunteers	Sensitivity (%)[a]	Specificity (%)[a]	No. of children
Basic training			
Not received	84/133[b, c] (63.2, 54.9–71.9)	324/341 (95.0, 92.7–97.3)	474
Received	92/128 (71.9, 64.1–79.7)	522/548 (95.3, 93.5–97.1)	676
Supervision			
Irregular	44/89 (49.4, 38.9–59.8)	207/234 (88.5, 84.4–92.6)	323
Regular	134/174 (77.0, 70.7–83.3)	653/669 (97.6, 96.4–98.8)	843

[a] Values in parentheses are percentages and estimated 95% confidence intervals.
[b] Numerator = number of children correctly diagnosed by the volunteers; denominator is the number of children identified by the physicians.
[c] Reliability of the measures are estimated by ϕ coefficients for basic training = 0.69 ($P<0.01$) and for supervision = 0.79 ($P<0.01$).

Table 5. **Factors related to agreement between health volunteers and doctors in assessment and treatment.**
Values are numbers (percentages) of children unless otherwise specified

Factor	Diagnosis	Treatment
Total number of observations (*n*=1166)	1038 (89.0)	1015 (87.2)
Basic training		
Not received (*n* =474)	408 (86.1)	398 (84.0)
Received (*n* =676)	614 (90.8)	603 (89.2)
P-value[a]	<0.01	<0.01
Supervision		
Irregular (*n* =323)	251 (77.7)	241 (74.6)
Regular *(n* =843)	787 (93.4)	774 (91.8)
P-value[a]	<0.01	<0.01

[a] ψ^2 tests were used to assess significance.

was encouraging and suggested that health programmes in poor countries could benefit from the experience of BRAC.

During this study, the presence of research physicians may have encouraged the health volunteers to be particularly careful when making diagnostic and treatment decisions; as a result, their performance might be slightly better than usual. The volunteers' performance in diagnosing "very severe" cases was poor, and very severely sick children generally were most likely to have a poor outcome. Often, volunteers categorized "very severe" cases as "severe" cases and treated them accordingly. This wrong categorization had a limited effect on the outcome because the volunteers were expected to refer the sick children of both these types of cases to nearby clinics.

Health volunteers generally were middle-aged, poor women. Their access to households who could afford to seek treatment from the physicians was limited. As a result, a small proportion (about 3%) of children were not covered by the programme. Although the age of the volunteers was not known, the influence of age variation on performance was expected to be minimal because a homogeneous group of less-educated, adult, and married women was recruited.

The positive role of intensive basic training on performance was shown in this study. The three-day basic training was very intensive and covered selected issues of human physiology in addition to the practice of identifying and treating ARIs under the supervision of physicians. The volunteers had the opportunity to observe interactions between physicians and fellow volunteers during training; this probably helped them to clarify many issues. The ARI programme had difficulties in providing basic training to a significant proportion (43%) of health volunteers, however, because of time and resource constraints. This was due in part to the replacement of trained volunteers who either performed poorly or left the programme. Special training for newly recruited volunteers was provided during refresher courses run by paramedics. This training had several weaknesses: it was not intensive, was not provided by physicians, and took several months to complete. In addition, it was not possible to cover all topics of the basic training in the refresher courses. Although the special trainees experienced more practical problems during the training period and had better opportunities to raise questions and learn, the content of this training was not enough for volunteers to reach the basic minimum level. The study suggests that the BRAC ARI programme should redesign the special training for new entrants to incorporate the knowledge and skills covered in the basic training. Emphasis should be placed on improving the quality of the basic and refresher training. A competency-based training method has been found to be very effective elsewhere (*20*). The refresher training should focus on instruction in basic skills, such as identification and diagnosis of the danger signs. Role-playing and problem solving may be used to reinforce the most important skills (*20*).

One important feature of this programme was the routine interaction between the ARI programme's management and the health volunteers through refresher training and supervision by para-professionals. Such interactions helped to keep the volunteers informed about new knowledge and skills (*8, 21*). It is not known, however, whether the transfer of new knowledge and skills to health volunteers through such refresher courses was possible when the basic training and skills were missing.

Good training in case management of ARIs does not necessarily ensure high-quality performance from health volunteers — unless the skills of the volunteers are used effectively (*22*). This study clearly shows that routine and close supervision was key to ensuring accurate case diagnosis and treatment. The volunteer service will be at its best when regular and intensive supervision is incorporated into the programme. The programme is likely to face difficulties in correct diagnosis and treatment of ARIs if a large proportion of health volunteers are not supervised regularly by para-professionals. Although arranging basic training for new entrants was difficult, ensuring routine supervision was not. It is essential that para-professionals who supervise community health volunteers follow a schedule according to identified needs (*8*), with more frequent visits for health volunteers who never received basic training or who have difficulty managing cases.

The findings are important for policy-makers because the approach adopted by BRAC can be replicated in other developing countries. One feature of this approach is the flexibility in replacing health volunteers who drop out and inefficient volunteers. Moreover, the programme was designed to be implemented at the grass roots level by less-educated, part-time volunteers. This approach made the ARI programme financially more viable than the use of full-time paramedics. The programme, however, can be improved further by incorporating all components of basic training in refresher training modules and by redesigning the supervision system, with more of a focus on the knowledge and skills of health volunteers.

The Government of Pakistan recently introduced WHO's case management approach for ARIs by employing paid community health workers as part of a comprehensive health care package for families (*23*). Since paid employment is more attractive than volunteering, it is expected that paid workers would be more accountable for their performance than volunteers and would have a lower dropout rate from the programme. The financial implications of employing paid workers at the national level are not known, however, and this option may not be sustainable for many developing countries.

Can the BRAC model be adopted by the Government in Bangladesh or elsewhere at the national level? Successful implementation of the voluntary approach needs intensive monitoring and close supervision of the programme. Keeping the volunteer approach alive in the long term is a difficult task. It may be difficult for the Government to institutionalize such an intensive monitoring system within its current bureaucratic

Table 6. **Logistic regression model for factors influencing correct assessment and treatment by health volunteers**

Variable	Model 1		Model 2	
	Odds ratio	*P*-value	Odds ratio	*P*-value
Correct diagnosis				
Basic training (rc[a] = no)	1.69	0.007 (1.15–2.48)[b]	1.21	0.473 (0.72–2.02)
Duration of experience (months)	1.00	0.801 (0.99–1.01)	1.00	0.701 (0.99–1.01)
Supervision (rc = irregular)	4.21	0 (2.86–6.19)	2.99	0 (1.73–5.14)
Age of child (months)	1.02	0.001 (1.01–1.03)	1.02	0.010 (1.01–1.03)
Sex (rc = male)	1.04	0.838 (0.70–1.53)	1.06	0.787 (0.70–1.53)
Interaction (basic training x supervision)			2.00	0.081 (0.72–1.55)
–2 log likelihood	737.3		734.2	
R^2	0.111		0.116	
χ^2	65.9		69.1	
df	5		6	
Significance	0		0	
Correct treatment				
Basic training (rc = no)	1.69	0.004 (1.18–2.42)	1.21	0.473 (0.72–2.02)
Duration of experience (months)	1.01	0.670 (0.99–1.01)	1.01	0.767 (0.99–1.01)
Supervision (rc = irregular)	4.15	0 (2.88–5.96)	2.96	0 (1.76–4.98)
Age of child (months)	1.02	0.005 (1.01–1.03)	1.02	0.006 (1.01–1.03)
Sex (rc = male)	1.32	0.143 (0.91–1.90)	1.33	0.125 (0.92–1.93)
Interaction (basic training x supervision)			1.93	0.077 (0.93–3.99)
–2 log likelihood	812.2		809.1	
Pseudo R^2	0.117		0.122	
χ^2	74.6		77.7	
df	5		6	
Significance	0		0	

[a] rc = reference category.
[b] Figures in parentheses are 95% confidence levels.

structure and to integrate volunteering into the formal health care programme.

The BRAC health volunteers provided other health services in the community, as well as diagnosing and treating acute respiratory infections among children. A better design for the ARI control programme will not help achieve the desired objective of improving primary health care in the community if other health programmes are ignored or less emphasized. The health volunteers' performance can probably be best used in an integrated approach into which other preventive components are incorporated. BRAC already has incorporated an ARI control programme within its essential health package, which covered nearly a third of the rural population in Bangladesh. Diagnosis and treatment of ARIs at households by community health volunteers are possible in developing countries if intensive basic training and close supervision of the service providers can be ensured. ■

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Conflicts of interest: none declared.

Résumé

Prise en charge des infections respiratoires aiguës par des agents de santé communautaires bénévoles : l'expérience du Bangladesh Rural Advancement Committee (BRAC)

Objectif Evaluer le rôle des pratiques de prise en charge des infections respiratoires aiguës (IRA) dans l'amélioration des compétences des agents de santé communautaires bénévoles en ce qui concerne le diagnostic et le traitement des IRA chez l'enfant.

Méthodes Les données ont été recueillies par un groupe de médecins chercheurs, qui ont observé le travail d'un échantillon de 120 agents de santé bénévoles dans 10 sous-districts du Bangladesh où le Bangladesh Rural Advancement Committee (BRAC) menait un programme communautaire de lutte contre les IRA depuis la mi-1992. Des tests standardisés ont été effectués jusqu'à ce qu'une fiabilité inter-médecins de 95 % ait été atteinte pour l'observation des examens cliniques.

Résultats La sensibilité, la spécificité et le taux global de concordance pour le diagnostic et le traitement des IRA étaient significativement plus élevés parmi les agents de santé bénévoles qui avaient reçu une formation de base et étaient régulièrement supervisés que parmi les autres.

Conclusion Le diagnostic et le traitement des IRA au niveau des ménages dans les pays en développement sont possibles si une formation de base intensive et une supervision étroite des prestataires sont assurées.

Resumen

Manejo de las infecciones respiratorias agudas por voluntarios de salud comunitarios: experiencia del Comité de Progreso Rural de Bangladesh

Objetivo Evaluar la contribución de las prácticas de manejo de las infecciones respiratorias agudas (IRA) a la mejora de la competencia de los voluntarios de salud comunitarios en el diagnóstico y el tratamiento de las infecciones respiratorias agudas entre los niños.
Métodos Los datos empleados fueron reunidos por un grupo de médicos investigadores que observaron el desempeño de una muestra de 120 voluntarios de salud en 10 subdistritos de Bangladesh en los que el Comité de Progreso Rural de ese país había puesto en marcha un programa comunitario de control de las IRA desde mediados de 1992. Se realizaron pruebas normalizadas hasta conseguir una fiabilidad intermédicos del 95% en la observación de los examenes clínicos.
Resultados La sensibilidad, la especificidad y las tasas de concordancia general en el diagnóstico y tratamiento de las IRA fueron significativamente mayores entre los voluntarios de salud que habían recibido formación básica y habían sido supervisados regularmente que entre los que no habían participado en esas actividades.
Conclusión El diagnóstico y tratamiento de las IRA a nivel de los hogares en los países en desarrollo constituye una alternativa viable si se garantiza una capacitación básica intensiva y una estrecha supervisión de los dispensadores de los servicios de salud.

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