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5. Author(s)

1. John Elder
2. Terry Louis
3. Omaj Sutisnaputra, et al.

6. Contributing Organization(s)

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The use of diarrhoeal management counselling cards for community health volunteer training in Indonesia: the HealthCom Project*

John P. Elder†, Terry Louis‡, Omay Sutisnaputra§, Neni Surani Sulaeiman§, Lisa Ware†, Willard Shaw‡, Carl de Moor† and Judy Graeff‡

†School of Public Health, San Diego State University, USA; ‡Academy for Educational Development, and §Ministry of Health, West Java, Indonesia

Summary

The Indonesian Ministry of Health relies on a network of over a million *kader* (community health volunteers) to bring primary health care to the village level. In West Java, the Department of Health's Control of Diarrhoeal Disease (CDD) Program recently carried out an extensive research and development effort to produce effective job aids for the *kader* in CDD and a training programme to teach their use. A set of counselling cards was produced to provide *kader* with a tool to diagnose and treat diarrhoea and teach the proper use of ORS. Researchers conducted a controlled evaluation in which they measured the cards' effectiveness through observations of *kader* performance and interviews with mothers they had counselled. In the intervention group, 15 *kader* underwent two days training in the use of the cards when diagnosing and advising treatment for cases of diarrhoea in their villages. The 16 control *kader* received comparable CDD training without the cards. Each group provided lists of local mothers they pledged to counsel during the coming weeks. Follow-up interviews were held with these mothers to test their level of knowledge on CDD and to observe their ability to mix ORS properly. Significant performance differences between the intervention *kader* and mothers, and the control *kader* and mothers,

were demonstrated. The intervention *kader* were consistently more accurate in their diagnoses and recommendations for treatment with a mean of 83% accuracy vs 68% for the control *kader*. Mothers counselled by the intervention *kader* also prepared ORS significantly better than the mothers counselled by the control *kader*, with 97 vs 74% accuracy.

Introduction

Diarrhoeal disease is the leading cause of infant and child morbidity and mortality and a major contributor to childhood malnutrition. One-third of all deaths of children under 5 years of age in underdeveloped regions of the world can be attributed to dehydration caused by diarrhoea (Galway *et al.* 1987). Although respiratory infections may be slightly more prevalent than diarrhoea in this age group in Indonesia, as many as 60 million diarrhoeal episodes occur in Indonesia each year, resulting in nearly half a million deaths. The point prevalence for diarrhoea in Indonesia among children is approximately 4% (Edmundson & Edmundson 1989; Sunoto 1982).

In Indonesia as in many other places, village health volunteers (in the Indonesian language called *kader*, which may be used as singular or plural, roughly corresponding to the Anglo-French word 'cadre') are responsible for a wide variety of child survival, reproductive health and other primary health care-related activities. Since 1960, Indonesia's primary health care system has increasingly relied upon *kader*,

Correspondence: Professor John P. Elder, Division of Health Promotion, Graduate School of Public Health, San Diego State University, San Diego, CA 92181, USA.

*This article is dedicated to the memory of Terry Louis, AED advisor to West Java, whose long career of service to the developing world ended much too soon in July 1990.

specifically trained in one or more health interventions, to bring selected health services directly to the village level. *Kader* are generally assigned the tasks of encouraging village participation in primary health care, collecting and recording basic health data, providing direct health services such as oral rehydration therapy, and conducting basic health education activities. *Kader* carry out these tasks through some home visits but primarily rely on the *posyandu*—a monthly meeting in the village where several *kader* provide services such as growth monitoring and oral rehydration therapy (ORT) counselling while paid professional staff from the local government health centre (*puskesmas*) provide immunizations (Judd 1987).

The deployment of *kader* is especially important in rural areas of Indonesia where social and geographic barriers may prevent large numbers of individuals from obtaining professional health care (Berman 1984). Emphasizing the importance of the training and deployment of *kader* in the primary health care system, the government of Indonesia hopes soon to have nearly two million trained and functioning throughout this nation of 184 million people (Mantra *et al.* 1988). However, brief and infrequent training, lack of subsequent supervision and support, high dropout rates, and a corresponding lack of utilization of these services by villagers undermine this approach to prevention and health care delivery (Judd 1987). These problems limit the effectiveness of *kader* especially when they are faced with tasks as complex as the control of diarrhoea and the management of dehydration through ORT. This requires the knowledge to diagnose and treat diarrhoea and dehydration and also the ability to instruct the parents in these techniques so that they will use them on affected children. Because it is available, effective and cheap, ORT is an important part of the primary health care strategy in Indonesia.

As in other provinces, West Java's *kader* play a significant role in staffing village health posts (*posyandu*) and providing other primary health services to the communities. The quality of communication between *kader* and mothers about diarrhoeal disease depends upon the

skills *kader* have as well as their confidence in these skills and the extent to which they contact mothers so the West Java CDD Program recently developed counselling cards for *kader* to use when talking to mothers whose children have diarrhoea. The set of five cards begins with a simple binary diagnostic algorithm which establishes the severity of the episode and directs the *kader* to one of four corresponding colour-coded treatment cards. The present study evaluated the efficacy of these cards in terms of the resultant skills of both the *kader* and the mothers they counselled.

Materials and methods

BACKGROUND

In 1989, West Java's CDD Program trained over 25 000 *kader* in ORT and the use of diarrhoeal disease counselling cards for advising mothers whose children have diarrhoea. This effort was assisted by the USAID-funded 'HealthCom' Project (Health Communications for Child Survival). To determine the effectiveness of the *kader* training on the knowledge and skills of both *kader* and mothers, researchers conducted a controlled evaluation. This study consisted of behavioural observations of *kader* in role plays of diarrhoeal diagnosis and treatment counselling during training and interviews with mothers whom they were assigned to counsel after training.

COUNSELLING CARDS

The idea for the counselling cards stemmed from research on *kader* that revealed that current materials were inadequate in helping *kader* to advise mothers on diarrhoea. West Java CDD staff launched an extensive effort to develop new materials that were more 'user friendly' for *kader* and mothers (Louis *et al.* 1990). Three formats for a set of counselling cards were developed, field tested, and eventually refined into a single set of five 11" × 5" (28 × 13 cm) cards consisting of a diagnostic card and four treatment cards. The diagnostic card relies on a series of yes-no questions in simple language that leads to a diagnosis of one of five categories of diarrhoea specified

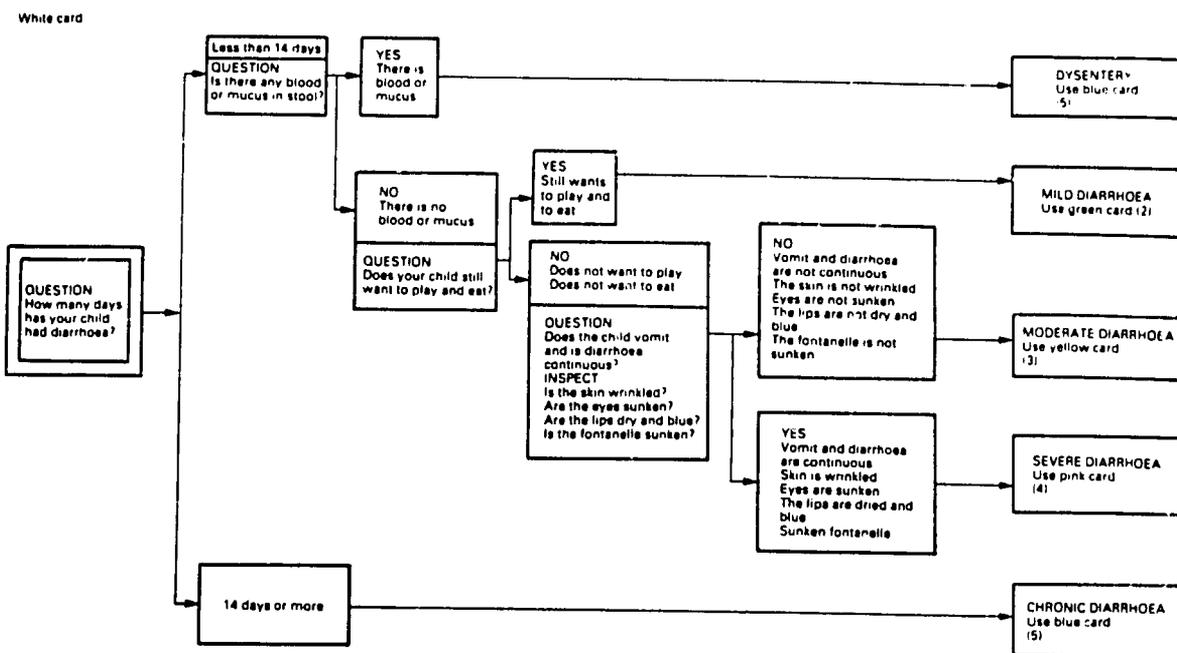


Figure 1. Diagnostic counselling card.

in the Ministry's case management approach (Figure 1). The categories of diarrhoea are colour-coded and numbered to match the four treatment cards. Chronic diarrhoea and dysentery are on a single treatment card. One side of the treatment cards contains specific advice and illustrations depicting the steps the caregiver should take. The reverse side of each card describes and depicts the proper mixing and administration of ORS (Figure 2). The set of cards consists of the following:

Card	Colour	Application
1	White	Diagnosis
2	Green	Mild diarrhoea ('Beginning diarrhoea')
3	Yellow	Moderate diarrhoea ('Diarrhoea with weakness')
4	Pink	Severe diarrhoea ('Diarrhoea with vomiting')
5	Blue	Chronic diarrhoea ('Dysentery')

SETTING

Six villages in West Java were selected jointly by Health Department and advisory staff. The primary criterion was that they be representative of villages in that area of West Java. Three

villages in the regency of Bogor provided *kader* and mothers for the intervention condition. The control subjects lived in three villages, in the neighbouring regency of Sukabumi with equivalent sociocultural and environmental conditions. All were served by public transport and were nearly equidistant from the nearest *puskesmas* (professionally-staffed health centres) and from the capitals of their respective regencies. Residents were of quite modest, although not impoverished, circumstances with agriculture being the principal industry.

SUBJECTS

Subjects were all of the 31 head *kader* from the *posyandu* serving the six villages in the study areas. Fifteen of the *kader* received the cards, two days' training, and served as the intervention group. Sixteen comparable control *kader* received similar case management, training, and materials but not the cards. All the *kader* were women. They in turn were requested to instruct seven mothers each in the preparation and administration of ORS, and 94 of these 217 women were randomly selected for subsequent validation interviews and observations.

TRAINING

Two trainers from the provincial health office instructed *puskesmas* staff in the methods for

4

Mixing and feeding Oralit-200
Please pay close attention on how to mix and to feed Oralit-200

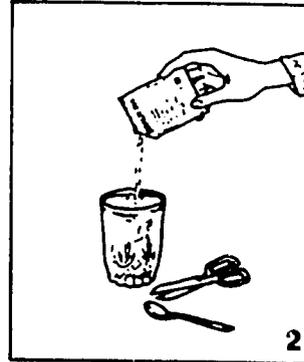
Yellow card

Side 2

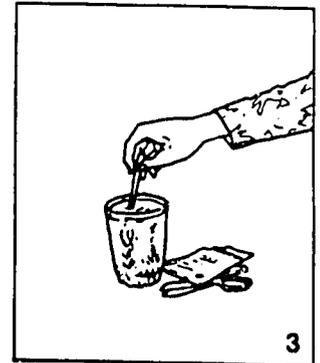
(1) Fill the belimbing glass with boiled and cooled water



(2) Empty all of the Oralit-200 powder into the glass



(3) Stir with spoon until mixed completely



Feed all of mixed Oralit-200 little by little with a spoon or straw



How old is the child?
Give the mixed Oralit according to the age of the child.

Baby 0-12 months

In the first 3 hours give $1\frac{1}{2}$ glasses and give $\frac{1}{2}$ glass when the child has a loose stool

Child 1-5 years

In the first 3 hours give 3 glasses and give 1 glass when the child has a loose stool

Please take these 5 packs of Oralit-200 that you can use at home.
If your child still has diarrhoea, you can ask for more Oralit-200.
Get your child to a *puskesmas* as soon as possible if your child becomes worse.

Figure 2. Reverse side of treatment card.

training the *kader* in their areas. In the control area, the *puskesmas* trainers worked from the behavioural objectives of the *kader* training and a review of policy and procedures related to diarrhoea management. The training centred on the dangers of dehydration resulting from diarrhoea, the five types of diarrhoea specified by the Ministry's case management policy and

their appropriate treatments, and the preparation and administration of Oralit. Each *puskesmas* staff also discussed how and when to use role playing to clarify points with the *kader*. The training of the *puskesmas* staff to use the counselling cards followed similar lines; however, the control group was given a treatment chart to use as an instructional device, while the

intervention group was shown how to use the counselling cards.

When training dates were established, invitations were sent to all participating *kader*. Their training was divided into two sessions, one week apart. Although they primarily used a lecture format as they conducted training, the *puskesmas* physicians and auxiliary personnel incorporated some demonstrations and role playing of counselling and using ORT. The first sessions lasted approximately 5 hours, after which all 31 *kader* were asked to select seven mothers to whom they would provide instructions on diarrhoea management in the coming week, and to report back one week later at the next training session as to how well the counselling had gone. The second sessions were of a shorter duration, and entailed a brief review of the procedures and of their consultations with mothers during their week between sessions. The *kader* were also asked to share the names and addresses of the mothers they intended to contact. This allowed researchers to select three mothers randomly per *kader* and use interviews to carry out a validation study in the month following training.

MEASUREMENT

At the end of the second training session, each *kader* in the control and intervention groups was asked to demonstrate her counselling skills individually in a separate room. One of the provincial health trainers (who had observed the sessions) played the role of a mother who had a child suffering from diarrhoea. The level of severity of the diarrhoea, corresponding to one of the counselling cards, was randomly selected before each role play began so that no *kader* knew *a priori* what symptoms to expect. This information was also kept from the trained observers who watched the role play and noted which diagnostic and counselling steps were performed and whether any errors were made, thereby minimizing observer bias. Observers used checklists derived from the criteria for appropriate diagnosis and counselling for diarrhoea.

Of the seven mothers each *kader* reported having contacted, a random sample of three was

selected for the validation interview and observation. Each mother was asked: (a) whether a *kader* had spoken to her in the last 30 days; (b) if so, whether the *kader* had mentioned anything about ORT; and (c) if so, which of the four steps of ORT the *kader* had mentioned. Each woman was then given a packet of Orait and asked to mix it just as she had been taught by the *kader*. One of the trained observers recorded any errors the mother made.

Results

The results of this evaluation provide indications of the potential of the counselling cards for developing and guiding skills in diarrhoeal case management. Of the 15 intervention *kader* using the diagnostic card, the mean percentage of the nine diagnostic steps performed correctly was 81.7, whereas the 16 control *kader* carried out an average of 30.5% of them correctly ($P < 0.001$). The mean percentage of the items performed correctly by *kader* during counselling role plays varied according to diarrhoea severity. The intervention *kader* responded to all but moderate diarrhoea significantly more accurately than did the control *kader*. Of the 13 counselling steps for mild diarrhoea, the intervention group averaged 78.3% correct, whereas the control group averaged only 7.7% correct ($P < 0.05$). In responding to moderate diarrhoea, a mean of 46.7% of the steps were performed correctly by intervention *kader*, which was not significantly better than the 21.7% performed by the control *kader*. A mean of 89.7% of the intervention group's responses to severe diarrhoea were performed correctly, against 25.6% of the control group's ($P < 0.005$). A mean of 73.9% of the 12 counselling steps for chronic diarrhoea or dysentery were performed correctly by the intervention *kader* against 20.9% for the control *kader* ($P < 0.005$). Errors generally took the form of omitting a particular step; however, incorrect descriptions of information were also coded as errors (Table 1).

All of the 46 mothers who were interviewed from the list of names given by the intervention group reported having received instruction from *kader*, while only 44 of the 48 mothers in

Table 1. Mean percentage of steps correctly performed by *kader* during diagnostic and counselling role plays by severity of diarrhoea and condition

	Control			Intervention			P-Value
	Mean	s.d.	n	Mean	s.d.	n	
Counselling	30.5	23.6	16	81.7	33.4	15	0.000
Mild diarrhoea	7.7	00.0	2	78.3	30.0	4	0.046
Moderate diarrhoea	21.7	17.5	4	46.7	50.3	3	0.589
Severe diarrhoea	25.6	16.0	4	89.7	11.8	3	0.050
Chronic diarrhoea	20.9	10.6	6	73.9	24.1	5	0.004

Table 2. Percentage of *kader* who performed required tasks and gave advice as reported by mothers in follow-up interviews, by condition

	Control		Intervention		P-Value
	n	%	n	%	
<i>Did kader</i>					
Explain about diarrhoea	37	84.1	46	100.0	0.005*
Use materials	15	34.1	39	84.8	0.000
Show how to mix Oralit	32	72.7	41	89.1	0.047
Teach how to give Oralit	34	77.3	43	93.5	0.029*
Advise breast-feeding	23	52.3	37	80.4	0.005
Advise fluids	25	56.8	31	67.4	0.301
Advise soft foods	31	70.5	37	80.4	0.271
Advise Oralit	41	93.2	45	97.8	0.355*
Advise visit to hospital	38	86.4	41	89.1	0.689

*Fisher's exact.

the control condition reported having had any contact with these *kader* over the previous month. The differences in performance of required tasks by the intervention *kader* as reported by mothers in these follow-up interviews were significantly higher. Table 3 shows that all the intervention *kader* explained the implications of diarrhoea to these 46 mothers, while 37 (84.1%) of the mothers counselled by the control *kader* had this discussed with them ($P=0.005$). Thirty-nine (84.8%) of the intervention mothers reported having seen educational materials against 15 (34.1%) of the control mothers ($P<0.001$). Asked if the *kader* showed them how to mix Oralit, 41 (89.1%) of the intervention mothers and 32 (72.7%) of the control mothers reported positively ($P<0.05$). Forty-three (93.5%) of the intervention mothers and 34 (77.3%) of the control mothers said that the *kader* taught them how to give the solution to their child ($P<0.05$) (Table 2).

The mothers were also asked which of the five components of diarrhoea management (breast-feeding, giving fluids, giving soft foods, giving Oralit, and going to the hospital) the *kader* had advised them in. Breast-feeding was the only component in which the intervention *kader* performed significantly better than their counterparts ($P<0.005$) (Table 2), although all outcomes favoured the intervention subjects.

Overall, the mean percentage of diarrhoea treatment instructions given by the *kader*, as reported by the mothers, was significantly higher for those *kader* in the intervention group ($P<0.015$). Analysis of variance showed that after controlling for *kader* education (<6 years, >6 years) and length of service (<1, 1, >1 year) mothers reported that intervention *kader* still delivered the diarrhoea treatment directions significantly more effectively than did the control *kader* ($P<0.05$). Multivariate analyses showed that neither their education nor length

Table 3. Percentage of mothers who performed Oralit preparation tasks correctly by condition

	Control		Intervention		P-Value		
	n	%	n	%			
Did mother							
Use correct glass	34	77.3	41	89.1	0.131		
Use boiled water	36	81.8	45	97.8	0.014*		
Shake packet	34	77.3	46	100.0	0.000*		
Stir with spoon	36	81.8	46	100.0	0.002		
Overall mean percentage of Oralit preparation tasks performed correctly by condition							
	Control		Intervention		P-Value		
	Mean %	s.d.	n	Mean %		s.d.	n
Mean percentage	74.0	0.40	48	97.0	0.10	46	0.001

of service significantly influenced the *kader's* ability to give treatment directions.

Mothers were then given a packet of Oralit and were asked to mix the ORS in a full glass of water. Consistent with national policy, the mothers were told by the *kader* to use the omnipresent *belimbing*, a 200 ml glass used throughout Indonesia for tea and coffee. Subsequently, a substantial difference between the two groups was shown in observations of three of the four steps in the ORS mixing process: using boiled water, shaking the packet, tearing the top off without problems, and stirring the mixture thoroughly. Table 3 shows that in the intervention group 89.1% (41) of the mothers used the correct-sized (200 ml) glass for mixing, not significantly different from the 77.3% (34) of the control group.

Of the intervention mothers, 97.8% (45) used boiled water, while 81.8% (36) of the control mothers did so ($P < 0.015$). All the intervention mothers shook the packet of Oralit before opening it, compared to only 77.3% (34) of the control mothers ($P < 0.001$). In the intervention group, all (46) of the mothers stirred the mixture thoroughly, while 81.8% (36) of the control mothers performed this task ($P < 0.005$).

Overall, the mean percentage of Oralit preparation tasks performed correctly by the mothers in the intervention group was significantly higher than those in the control group. After controlling for education, age,

and number of children, the performance of mothers who were in the intervention group was still highly significant ($P < 0.001$). Neither education nor age was significantly associated with ORT skills.

Discussion

This study evaluated the effectiveness of counselling cards as a tool to help *kader* diagnose and recommend treatment to mothers whose children have diarrhoeal disease. It also sought to measure resulting ORS mixing skills of these mothers. Results from this study suggest that even a brief amount of participatory training with the cards has a desirable effect on *kader* performance. Even after controlling for parity, education and age, analyses showed that the use of the counselling cards had a marked impact on *kader* effectiveness as well as on mothers' ability to prepare Oralit correctly.

To their credit, the control *kader* did reasonably well, both in terms of their own skills and their influence on the mothers they instructed. This is not surprising as *kader* in the present study were primarily those who had substantial experience in the management of *posyandu* (which is a village health post or meeting place, often located in the *kader's* home), in the provision of general health services, and in counselling mothers. There are no data on why

the control *kader* did not complete four of their counselling assignments, although perhaps they lacked the confidence shown by their counterparts who had the special supportive materials. In any case, it appears that standard training procedures can be at least moderately effective in promoting the management of diarrhoea. However, enhanced training and 'portable supervision' offered by the counselling cards may strongly augment this effectiveness, especially over the long term.

This study had a few potential weaknesses. Although care was taken to establish the equivalence in characteristics between intervention and control groups, a larger sample might have been more representative of the *kader* population. One might also suspect some bias on the part of the mothers who reported on the *kader* performance. The *kader* in the control group may have explained the same information but without the coloured counselling card as a visual prompt. The control mothers may simply have forgotten that the *kader* had indeed given the information in question. Although this point does not detract from the cards' effectiveness, it may be that the control *kader* actually performed better than was reported.

Significant results of the present study point to the potential efficacy of the counselling card intervention. This intervention was further validated in the study through specially trained observers' measurement of *kader* performance by role play after training, by mothers' reports of what the *kader* had said, and by the observation of mothers' ability to prepare Oralit correctly. The *kader* programme in Indonesia is long established and well suited for an intervention of this magnitude. The incorporation of trained observers in evaluating both the *kader*

and the mothers enhanced the validity of the study.

One remaining question is to what extent this intervention has lasting effectiveness. Although not possible in the present study, a long-term follow-up evaluation of the intervention *kader* could establish whether the positive effects of the training intervention are sustainable. In any case, the results from the present study strongly support the full scale use of instructional aids such as *kader* counselling cards.

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