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The impact of information, education and communication (IEC) activities on the control of iron deficiency

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Introduction

One of the strategies for combating iron deficiency anaemia is nutrition education of the community, with special reference to iron deficiency. A study was therefore conducted to assess the effectiveness of training and information, education and communication (IEC) activities on reducing the prevalence of iron deficiency anaemia during pregnancy. The specific objectives of the study included identifying the major training institutions that conduct training of community level public health workers on the control of anaemia, to determine the effectiveness of the training, to develop a standardized monitoring system to track the effectiveness of the training and to identify the major institutions that develop IEC material for the control and prevention of anaemia.

This presentation will deal with the effectiveness of training of the Public Health Staff by assessing the knowledge, service efficiency and management capabilities of Medical Officers of Health and Public Health Midwives to control iron deficiency anaemia.

Population studied and Methods

Due to limitation of time and funds, it was decided to study Public Health Midwives (PHM), Medical Officers of Health (MOH) and the Public Health Nursing Sisters (PHNS) and the mothers in their care, in the three sectors, urban, rural and estate, in three of the nine provinces, the Western representing the urban sector, the North Central the rural sector and the Central Province representing the estate sector. From these provinces 3 districts were selected, namely, Colombo, Anuradhapura and Nuwara Eliya.

Lot Quality Assurance Sampling (LQAS) Method

The Lot Quality Assurance Sampling (LQAS) method (1) was used in the study because of its simplicity, accuracy, the short time required for implementation and the ease of analysis.

LQAS uses in an imaginative way one of the most basic and powerful statistics, namely binomials, which indicates the likelihood of an event occurring. The particular event studied was whether a health worker has been effectively educating mothers in the community on the control and prevention of iron deficiency anaemia. The production unit identified was thus the community.

The next step was to choose the performance expectations for the health worker, i.e. thresholds. It was decided to use 80% as the upper threshold and 50% as the lower threshold. The upper threshold is what the investigator (or MOH) expects of the health worker, the PHM. The lower threshold represents the community's risk. Identifying the PHM who does well (reaches the 80% mark) and those whose performance is poor (below 50%) helps to direct scarce time and resources to understanding why a PHM is below standard and to improve her performance.

In step 3, a decision has to be made as to the level of accuracy desired. To keep the error to about 10%, one has to identify at least 90% of good workers and 90% of the problematic ones. The risk to the community (risk to the consumer) is minimised by identifying accurately as many of the PHMs as possible who are not working well, and the risk to the investigator or MOH (the producer risk) by identifying correctly the PHMs who are working well. Because both types of risk are important, it was decided to select a

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sample size that has 4 similar consumer and producer risks. A sample size of 19 is the smallest that can be selected (from the LQAS table) that satisfies such a condition.

The last step in the LQAS method relates to the interpretation of the LQAS result. For each question a mother can be correct or incorrect. A zero mark is given if the answer is correct and one if answer is incorrect. To interpret the total scored by a mother: for a sample of 19, the number of failures permitted in the LQAS method is 6. A community has adequate coverage if 6 (or less) mothers in the sample fail to answer correctly. If 7 or more fail to respond correctly the community has not reached the standard.

Using these probability tables, it was decided that the 19:6 LQAS decision rule was appropriate for the study. In other words, 19 antenatal clinics per district would be visited and 6 defects would be the cut off level to define adequacy of service in that district. Under this rule a component either functions adequately or it does not. A PHM fails when more than one of six observations indicates poor performance. A component fails in a province when more than 6 out of 19 clinics fail the component.

Instruments for data collecting

Four instruments were designed and pre-tested.

i. Observation check list for PHM's service delivery in ante-natal clinics

Six mothers were observed using the 7 components identified.

a) Did the PHM attend to 6 activities expected of her at the clinic?

b) Did the PHM explain the importance of iron for maintaining growth?

c) Did she explain the signs of iron deficiency?

d) Did she indicate high-risk groups for iron deficiency?

e) Did she explain the importance of colostrum and breast milk, need for exclusive breast feeding for 4 to 6 months, the importance of meat and fish in diet.

f) Did she explain the importance of iron supplements during pregnancy?

g) Did she examine the eye lids and tongue of mothers?

ii. Check list to interview pregnant women attending the clinic?

Six pregnant women were interviewed at each clinic, randomly selected, and their knowledge on anaemia assessed by asking a few selected questions which would cover most facts a pregnant woman should know regarding prevention and control of anaemia.

iii. Questionnaire for MOH/DDHS

This was to assess the MOH's management role in anaemia control. One MOH per clinic was interviewed. Taking the service, educational and management function of the MOH/DDHS into consideration, 18 components were identified as representative of all his/her responsibilities.

iv. Checklist and observation guide for PHNS

The purpose of this assessment was to determine the PHN's knowledge and activities related to anaemia control.

All 4 instruments were reviewed and discussed with experienced and qualified programme managers, including officers of the Health Education Bureau, Family Health Bureau and the University of Colombo. The instruments were pre-tested in an ante-natal clinic in the City of Colombo.

One supervisor and two field investigators formed a team responsible for data collection from 19 clinics in each province. The MOH's questionnaire was self-administered. One PHM in each clinic was observed when attending to 6 mothers. The PHMs and mothers were selected randomly. PHNs were not interviewed as there were no PHNs in the estate sector and less than 50% in the other two sectors.

Results

Observations on activities of PHM

The performance of the PHMs is indicated in Table 1. In this Table, component one refers to what the PHM should have been observed doing; weighing mother and noting weight on chart, measuring height at first visit of mother, testing urine, health education and issue of iron tablets. In components 2, 3 and 4, whether mother was told of importance of weight gain, signs of iron deficiency and the high risk groups in anaemia. Component 5 dealt with feeding colostrum and breast feeding, component 6, explaining importance of iron and components 7 and 8, examinations of eye lids and tongue.

All PHMs in all clinics in the 3 sectors were attending to their basic functions adequately. PHMs in the urban and the rural sector performed inadequately in 7 components. In the estate sector the PHMs performed adequately except in signs of iron deficiency and in identifying iron rich foods. The quality of service was in general superior to that in the urban and rural sectors. None of the PHMs in the 19 clinics in the NCP (rural) examined the tongue or eye lids.

Observations on mothers

Table 2 indicates the quality of the mother's knowledge on anaemia. In the Western Province (urban sector) services are adequate only in respect of 2 components: frequency of visits to clinic by pregnant women and adequacy of tablets given to them. Mothers had received inadequate service in examination of tongue and eye lids, knowledge on anaemia, its prevention, foods rich in iron, kind of tablets to be taken and three diseases resulting in anaemia.

In the rural sector (NCP), 5 components were adequately serviced, the deficiencies being in talks on anaemia and its prevention, disease conditions causing anaemia and kind of tablets to be taken.

The estate sector (Central Province) appears to be better than the other two. Out of 19 clinics observed, the knowledge component was adequate in 7 out of 9 components, inadequacies being in kinds of tablets given to prevent anaemia and diseases causing anaemia.

In all three sectors, in general, the components in which pregnant women are inadequately informed were diseases causing anaemia and kind of tablets needed for prevention.

Effectiveness of MOH's management role in anaemia control

In the urban sector (Colombo District) all MOH's consided themselves competent to handle all components assigned to them. They considered that, on the whole, the ante-natal services provided to mothers is adequate, and that their own knowledge on the specified components is also adequate. Nine DDHS/MOHs have had a training in the control and prevention of anaemia during the last 3 yrs. All of them accept that anaemia is a priority health problem in Sri Lanka and state that they have adequate knowledge on iron deficiency anaemia and its control.

In the rural sector (Anuradhapura District) 19 MOHs answered the questionnaire. As in the urban sector, out of 18 components in the check list used to assess knowledge and management capability of the MOH, all were found to be adequate, in all clinics.

In the estate sector (Nuwara Eiiya District) there are no qualified MOHs in charge of health services. Estates have their own medical personnel, designated Estate Medical Assistants (EMA), who are Registered Medical Practitioners, Pharmacists or persons with experience and medical training.

The EMAs see to the health needs of estate workers, providing both preventive and curative services. Almost every estate has a dispensary and a maternity home. EMAs see to ante-natal and post-natal care of mothers. They also conduct clinics to provide child care, school health and

Table 1

Observation of Public Health Midwives at the clinic

	Western Province			North Central Province			Central Province		
Component	Adequate	Inadequate	Service adequate	Adequate	Inadequate	Service adequate	Adequate	Inadequate	Service adequate
01	19	0	Yes	19	0	Yes	19	0	Yes
02	11	08	No	01	18	No	15	04	Yes
03	06	13	No	02	17	No	10	09	No
04	03	16	No	05	14	No	17	02	Yes
05	06	13	No	04	15	No	01	18	No
06	11	08	No	05	14	No	16	03	Yes
07	07	12	No	0	19	No	15	04	Yes
08	07	12	No	0	19	No	15	04	Yes

Table 2

Mother's knowledge on anaemia

	Western Province			North Central Province			Central Province		
Component	Adequate	Inadequate	Service adequate	Adequate	Inadequate	Service adequate	Adequate	Inadequate	Service adequate
01	08	11	No	13	06	Yes	17	02	Yes
02	09	10	No	13	06	Yes	17	02	Yes
03	09	10	No	09	10	No	17	02	Yes
04	06	13	No	11	08	No	15	04	Yes
05	18	01	Yes	19	0	Yes	18	01	Yes
06	06	13	No	10	09	No	05	14	No
07	18	01	Yes	18	01	Yes	16	03	Yes
08	04	14	No	16	03	Yes	14	05	Yes
09	01	18	No	11	08	No	0	19	No

family planning. Patients that cannot be managed by them, specially high risk mothers, are refered to the closest government hospital. EMAs are provided with refresher training in all components of the Primary Health Care package, regularly. EMAs are provided with adequate drugs. The Plantation, Housing and Social Welfare Trust (PHSWT) ensures that welfare activities of estate workers are looked after.

The assessment of their knowledge and management capabilities indicate that most EMAs are adequately knowledgeable on the activities related to prevention and control of anaemia. However, in 8 clinics, they felt they needed more information on iron deficiency. At 9 clinics they found it difficult to spend any extra time on anaemia control activities. In 12 clinics the EMAs indicated they do not know fully what measures should be taken to meet iron requirements during pregnancy.

Discussion and Conclusions

This study on the effectiveness of the training of public health staff in the prevention and control of iron deficiency anaemia was directed at 3 components of the anaemia control programme implemented by the Ministry of Health through the peripheral services, in the urban, rural and estate sectors.

The study included,

i. observation of services provided to an antenatal mother by the PHM during the mother's attendance at a clinic,

ii assessment of knowledge of the mother on essential aspects of anaemia, and

iii assessment of the managerial function of the DDHS/MOH in anaemia control.

The assessment of the quality of the services was judged using the LQAS method

In all three sectors the PHMs attended to their basic functions adequately. These functions included weighing and maintaining the mother's card, testing urine, issuing iron tablets and health education. However, there were variations between the sectors with regard to the other components observed. In the urban and rural sectors all seven other components were inadequately delivered. In the estate sector, on the other hand, six out of eight components were adequately delivered.

Two components that need attention in all 3 sectors are the ability to detect signs of iron deficiency and knowledge of foods rich in iron. It is therefore imperative that PHMs receive regular in-service training.

As far as the knowledge of mothers is concerned, knowledge was adequate only in 2 components, in the urban sector. The mothers in the rural sector fared better than in the other two, being inadequate only in 2 components.

Where knowledge and management functions of the MOH is concerned, the position is different. Although the PHMs attached to estates are provided with the same training as those in the urban and rural sectors, the place of the MOH is taken by EMAs who are not fully qualified doctors, although they are provided with regular in-service training by the PHSWT whenever new programmes are introduced. The EMAs said they had insufficient time to devote to iron deficiency control activities. In 12 clinics the EMAs said they were unaware of measures that should be taken to meet iron requirements during pregnancy.

The MOHs in the urban and rural sectors assessed themselves as being aware of measures to prevent and control and treat iron deficiency anaemia. All 18 components in the checklist were found to be adequate in all clinics.

The question arises: if this position be correct, that MOHs are more adequately equipped than the EMAs to manage anaemia control programmes, how is it that the mothers attending clinics run by MOHs fared poorly when compared with mothers in the estate sector. Both mothers and PHMs in the Western Province are more exposed to health education and other programmes in the electronic media, in spite of which the less educated and more deprived women on the estates are cared for better.

One reason could be that EMAs identify themselves with, and care more for the people in their charge. They are permanent in their jobs and in the place of work, reside on the estate and begin to know and care for their population, whereas the MOH is waiting to complete the one or two years required of him, as an MOH, to move to another area of medical practice, which illustrates the need for caring, in addition to knowledge and skills.

Monitoring activities of work at the periphery is inadequate and irregularly performed, due to the methods used being time consuming. Monitoring should be carried out regularly, and it is recommended that the LQAS method be widely used for monitoring. It is effective, is less time consuming and less costly. With minimum training, supervising officers should be able to perform this task.

At the Divisional Director of Health Services (DDHS) level, monitoring could be done by a team consisiting of the DDHS, PHNS, Senior Public Health Midwife (SPHM) and Senior Public Health Inspector (SPHI).

At the DPDHS level the team can comprise the Medical Officer (Maternal and Child Health (MO, MCH), the Regional Epidemiologist, the Regional Public Health Nursing Officer and the SPHI attached to the DPDHS office.

It is also recommended that continuing education on the control and prevention of iron deficiency, as well as other micro nutrient deficiencies, be provided to all categories of the Primary Health Care Programme. The DDHS should obtain relevant visual aids on anaemia for distribution to PHMs and use in the programmes.

The PHMs should prepare a quarterly programme for conducting small group discussion and person to person counselling of women on anaemia and related subjects, prioritizing the at-risk groups, *viz* pregnant and lactating women, adolescent girls and women in the reproductive age.

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