Process evaluation of an EPI-integrated vitamin A capsule delivery programme in KAT zone, southern Ethiopia

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Background. As an intermediate strategy to control vitamin A deficiency, which is one of the major nutritional problems in Ethiopia, the United Nations International Children's Emergency Fund (UNICEF) and the Ministry of Health initiated a national vitamin A supplementation programme utilising oral delivery of vitamin A in mid-1995. The aim was to improve vitamin A status by providing vitamin A to all children under 5 years and to lactating and pregnant women in accordance with the schedule and dosage recommended by the World Health Organisation (WHO). Process evaluation of the programme was conducted in June 1997.

Objectives. To evaluate the progress of the programme, identify constraints and forward suggestions to improve programme implementation.

Methods. The southern region of Ethiopia was selected deliberately, while KAT (Kambatta, Alaba and Timbaro) zone was selected randomly. Two districts in KAT zone were selected randomly and all health institutions in these districts and about 40 systematically selected mothers living around the health institutions were included in the study. Discussions regarding various aspects of the programme were entered into with relevant officials at the regional health office, zonal health office and institution offices. A questionnaire addressing maternal awareness of the programme and maternal knowledge regarding vitamin A was administered by trained nurses.

Results. Results indicate that the institutions in the two districts received only 10.2% of their total requirement of 50 000 IU vitamin A capsules and none of the 10 000 IU capsules. Of this meagre amount received, about 50% was reported to have been delivered, but there was no documentation of the distribution available to support this claim. Training, teaching materials and workshops were inadequate, and lack of awareness was therefore mentioned as a major problem by most respondents. Lack of adequate resources, especially lack of adequate health personnel and budget, was mentioned as a crucial problem by those health institutions that had attempted to implement the programme. No supervisory or monitoring mechanisms had been instituted. Maternal understanding of the importance of vitamin A was poor. Only 18.7% of the mothers could name at least one food rich in vitamin A and only 6.1% knew the consequences of vitamin A deficiency. Only 2.8% of the mothers reported that at least one of their children had received vitamin A supplementation.

Conclusions and recommendations. Based on these results it is difficult to conclude that the programme achieved its objectives. Lack of awareness at all levels of the health care delivery system and inadequate resources (staff and logistics) appear to have been the major constraints. Therefore, promotion of awareness among all concerned stakeholders including mothers, involvement of the non-health sector, and provision of adequate financial and logistical support are highly recommended for the effective implementation of such a programme.

Vitamin A deficiency (VAD) has long been established as a major public health problem in Ethiopia.[1-3] A national VAD prevalence survey[4] conducted in 1981 indicated a Bitot's spot prevalence rate of 1%, which is twice the World Health Organisation (WHO) cut-off point at which VAD is considered to be a public health problem. The national survey also showed relatively high deficiency states in the pastoral and cereal cropping areas (Bitot's spot prevalence rates of 1.6% and 1.1% respectively) compared with cash cropping and root cropping areas (Bitot's spot prevalence rates of 0.4% and 0.0% respectively). A more recent survey conducted in seven districts in central Ethiopia showed a prevalence rate of 0.2 -2.3%.[5]

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Vitamin A supplementation through oral delivery has proved to be an important measure in combating VAD. Controlled community-based prophylactic supplementation trials have shown a 23% reduction in childhood mortality.[6]

Recognising this fact and as part of the global movement, the national VAD control programme in Ethiopia adopted the disease-targeted approach in 1989. Oral delivery of vitamin A capsules (VAC) to the high-risk population visiting health facilities (children under 6 years, lactating mothers and pregnant women) was implemented according to the recommended dose through the mother and child health (MCH) services of the health infrastructure until 1994. Five years of experience with the VAC supplementation programme in Ethiopia has revealed pitfalls in the targeted distribution approach. Cognisant of these shortcomings, the former Ethiopian Nutrition Institute (ENI) considered resorting to a mass distribution approach in the hope of accelerating the

coverage rate in large stretches of the country. The first trial of the biannual community-based universal distribution to preschool children was effected in four central districts in the second and fourth quarters of 1993 in response to the then-prevailing VAD epidemics in the area. The xerophthalmia rate in the districts dropped from a pre-intervention baseline rate of 10.9% to 4.5%.[7]

Based on the lessons learned from this trial and in an attempt to meet the universal goal of eradicating VAD by the year 2000, the Ministry of Health (MOH) adopted and initiated the universal vitamin A supplementation strategy in 1995. The aim of the programme was to improve vitamin A status by biannually providing high doses of vitamin A (200 000 IU) to all children aged between 1 and 5 years, a single dose of 100 000 IU to all children between 6 months and 1 year, a single dose of 2 000 000 IU to lactating non-pregnant women and 10 000 IU to women who were pregnant or at risk of becoming pregnant. The health infrastructure, particularly the Expanded Programme on Immunisation (EPI) section, was given the responsibility of implementing the programme and EPI and MCH contacts were considered an ideal means to access the target group. Along with the distribution and oral dosing of vitamin A, the programme had other components. These included advocacy and sensitisation activities to promote awareness among health workers and mothers through training, workshops, seminars and production and distribution of guidelines and teaching materials.

In an attempt to evaluate the impact of the programme, the Ethiopian Health and Nutrition Institute (EHNRI) in collaboration with the United Nations International Children's Emergency Fund (UNICEF) conducted a baseline (pre-intervention) survey in the northern (cereal cropping), eastern (cash cropping) and southern (root cropping) regions in 1996. The results of the baseline survey showed Bitot's spot prevalence rates of 1.5%, 7.6% and 0.2% in cereal cropping, cash cropping and root cropping areas respectively.[8,9] An impact evaluation (post-intervention) survey was conducted in the northern and eastern regions in June 1997. The results indicated a 66% and 43% reduction in Bitot's spot prevalence rates in the northern and eastern regions respectively.[9]

While impact evaluation surveys were undertaken in the northern and eastern regions as mentioned above, only process evaluation was conducted in the southern region, because it was felt that the programme was not implemented as planned. The purpose of this article is to share some of the findings of this process evaluation. It is hoped that the lessons learned from this evaluative study will help programme managers and implementers who are working towards eliminating VAD.

Methods

Ethiopia consists of 10 federal states, locally referred to as regions. Southern Nations Nationalities and Peoples Region (SNNPR), with an estimated total population of 12.5 million, is one of these 10 Federal States. SNNPR, which was deliberately selected for this study, consists of 10 administrative 'zones' (equivalent to provinces). Among these 10 zones, KAT zone (Kambatta, Alaba and Timbaro), with an estimated population of 850 000, was randomly selected. Among the five districts (locally referred to as *woredas*) in KAT zone, two districts with a combined population of about 430 000 were randomly selected. All health institutions in these two districts (two health centres and six clinics) were included in the assessment. As the regional health office, zonal health office and health institutions were responsible for the overall implementation of the programme at their respective administrative levels, information was collected at these levels through key informant and focus group discussions. Information gathering began on 17 June 1997, about 2 years after initiation of the programme, and ended on 12 July 1997.

As the regional health office (EPI section) was responsible for collecting VAC, posters and guidelines from the MOH and distributing them to zonal health offices, organising workshops and seminars for zonal health managers and monitoring the implementation of the programme in the region, discussions regarding these responsibilities were entered into with the regional EPI co-ordinator.

Similarly, the zonal health office was responsible for collecting VAC, posters and guidelines from the regional health office. It distributed them to health institutions, organised workshops and seminars for health workers and monitored the implementation of the programme in the zone. As such the zonal EPI co-ordinator provided the required information.

Health institutions were responsible for collecting VAC, posters and guidelines from the zonal health office, delivery of VAC to beneficiaries according to the recommended dosage and schedule, and provision of nutrition education for mothers. They were also responsible for recording and reporting on the progress of the programme. Any health staff present in the health facility at the time of this survey provided information regarding the status of these activities.

In addition to discussions with relevant offices as mentioned above, a questionnaire addressing issues related to maternal awareness of the consequences and prevention of VAD and knowledge of the existence of the vitamin A supplementation programme, was administered to 40 systematically selected mothers of children aged under 5 years around each health institution (a total of 320 mothers) by trained nurses.

Although many of the capsules were 50 000 IU, some 200 000 IU capsules were also provided. In order to simplify calculations the 200 000 IU capsules were converted to 50 000 IU (each capsule of 200 000 IU was considered equivalent to four 50 000 IU capsules). As there was no significant difference in all aspects between the two districts and between health institutions, findings were aggregated and presented as health institution-level findings.

Results and discussion

Discussions entered into with key informants revealed that the MOH began dispensing VAC as well as other materials from mid 1995. Therefore, the programme can be said to have been initiated in June 1995 and had been in place for about 2 years when the process evaluation was conducted in June/July 1997. It was also learned that the MOH, regional health office, zonal health office and health institutions were involved in the request for and acquisition and distribution of VAC. The VAC requirement was initially estimated and requested at health institution level. Health institutions estimated the requirement based on the number of expected beneficiaries in their respective catchment areas. Zone level requirements were estimated based on the estimates forwarded from health institutions in the zone, and regional level requirements were based on the estimated requirements of the zones in the region. Thus, the estimated regional requirement was forwarded to the MOH and the MOH was expected to deliver the amount requested to each region. Similarly, regions were expected to deliver the amounts requested to the zones, and zones to health institutions. Although the acquisition and delivery of VAC was supposed to proceed as described above, there appears to have been a flaw in the process. Observations and findings of this survey indicate that inadequate amounts of VAC, both in type and quantity, were collected and distributed at all levels. At regional level, of the estimated requirements only 48.6% of the 50 000 IU capsules and 88.9% of the 10 000 IU capsules were collected from the MOH from the initiation of the programme. At zone level only 11.8% of the 50 000 IU capsules were collected from the regional health office.
10 000 IU capsules were not collected at all. On average the health institutions received 10.2% of their 50 000 IU capsules and no 10 000 IU capsules (Table I).

With regard to distribution, of the meagre amount received some 50 000 IU capsules and more than one-third of 10 000 IU capsules were not distributed at regional level. At zone level nearly one-quarter were not distributed. On average, health institutions reported that they distributed 44.6% of the 50 000 IU capsules (Table II). However, there was no documentation to support this claim.

One of the major reasons forwarded by the informants regarding difficulty in implementing the programme was lack of adequate health personnel. Although the problem was said to have been common at all levels, it was critical at health institution level. Among the eight health institutions seen, three clinics had only one health staff member, three health institutions had two health staff members and only two health institutions had more than two health staff members at the time of the survey. The discussants firmly underlined the difficulty of integrating additional programmes given the existing human resource.

Other reasons mentioned were lack of budget and inadequate logistics to carry out the programme. The discussants at all levels said that lack of budget for daily

Table I. Type of VAC, number of VAC received, estimated requirement and per cent adequacy of VAC at various levels in the health care delivery system

Level	Type of VAC (IU)	Number of capsules	Required number	Adequacy (%)
Regional health office	50 000	12 920 520	26 585 432	48.6
	10 000	564 000	634 420	88.9
Zonal health office	50 000	260 000	2 203 382	11.8
	10 000	Nil		Nil
Health institutions	50 000	99 100	971 569	10.2
	10 000	Nil		Nil

VAC = vitamin A capsules.

Table II. Type of VAC, number of VAC distributed and per cent distribution at various levels in the health care delivery system

Level	Type of VAC (IU)	Number of VAC	Distribution (%)
Regional health office	50 000	11 892 000	92.0
	10 000	358 000	63.5
Zonal health office	50 000	203 000	78.1
	10 000		
Health institutions	50 000	44 225	44.6
	10 000		

VAC = vitamin A capsules.

transportation necessary during collection and distribution of VAC were major obstacles. Lack of vehicles needed for distributing VAC at outreach sites was held to have been one of the impediments. Although the programme was said to have been integrated with the EPI and was supposed to utilise EPI resources, the EPI was itself facing budget constraints.

Promotion of awareness among the implementers as well as the beneficiaries was considered vital for the successful implementation of the programme. Therefore activities promoting awareness were included in the programme from the outset. The sensitisation and advocacy activities envisaged included workshops and seminars, and distribution of posters, leaflets and guidelines. As shown in Table III, there were two workshops at regional level and two seminars at zonal level, where the supplementation programme was directly or indirectly addressed. The regional workshops were organised for zonal health managers while the zonal seminars were organised for health staff at health institution level. With regard to the zonal (provincial) seminars, three nurses from each district participated in the micronutrient seminar, and two nurses and two health assistants from each district participated in the integrated health services seminar. Although the seminars and workshops were not adequate by themselves, the problem of lack of trained health workers was exacerbated by transfers and people quitting jobs in search of better payment and living conditions, as these health institutions are located in remote areas. The response to our enquiry about the number of health staff who attended at least one of these workshops indicated that only one health worker from each of two health institutions had participated in a workshop at the time of the study (Table IV). The initial plan of distributing guidelines, posters and leaflets appears to have been unsuccessful. As shown in Table IV, only three health institutions reported receiving guidelines and only two reported receiving posters.

It is apparent that as a result of these inadequate sensitisation activities many health workers were not aware of the objectives and implementation procedures. For example, many health workers including doctors said that they used the capsules only for treatment purposes, while some said they used the VAC as an incentive for EPI.

Table IV. Number of trained staff, material acquisition and monitoring components of the programme at health institution level (*N* = 8)

Components	Number (%)
Health institutions with at least one trained staff member	2 (25.0)
Health institutions that received guidelines	3 (37.5)
Health institutions that received posters	2 (25.0)
Health institutions that submitted reports	0 (0.0)
Health institutions where records were available	1 (12.5)
Health institutions supervised at least once	0 (0.0)

Monitoring and evaluation mechanisms, which are essential components of any programme, were minimal or totally unavailable. Again as depicted in Table IV, none of the health institutions submitted reports and similarly none of the health institutions was supervised. An attempt to record age, date, physiological status and dosage had been made at only one health institution. Unavailability of recording and reporting formats was mentioned as a problem contributing to this end.

Promotion of awareness among mothers of the importance of vitamin A, deficiency consequences, and how to prevent VAD was included as a component of the programme. It was intended to be effected through face-to-face communication during any contact and especially during VAC delivery. Overall maternal understanding of vitamin A and awareness of the vitamin A supplementation programme was found to be poor. As shown in Table V, only 6.1% of the studied mothers knew the consequences of VAD, with only 18.7% being able to name at least one food rich in VA. Only 4.6% of the mothers studied

Table III. Training/workshops/seminars related to VAC supplementation, and qualification and number of participating health staff

Training workshop/seminar	Organising institute	Participants	Number of participants
Regional workshop on micro-nutrients	Regional health office	Nurses	16
		Health assistants	5
		Sanitarians	2
Regional workshop on integrated health services	Regional health office	Doctors	9
		Nurses	9
Seminar on micronutrients	Zonal health office	District Health Office Heads	5
		Nurses from health institutes	10
Seminar on integrated health services	Zonal health office	Nurses	10
		Health assistants	10

VAC = vitamin A capsules.

Table V. Maternal knowledge of vitamin A and the vitamin A supplementation programme (*N* = 320)

	%
Knowledge of foods rich in vitamin A	18.7
Knowledge of the consequences of VAD	6.1
Awareness of VAC supplementation	4.6
Mothers reporting that they had received VAC	0.3
Mothers reporting that one of their children had received VAC	2.8

VAD = vitamin A deficiency; VAC = vitamin A capsules.

were aware of the VAC supplementation programme. Only 2.8% reported that at least one of their children had received VAC, while only 0.3% said that they had received the supplements.

Conclusions and recommendations

The findings of the process evaluation indicate serious flaws in the process of acquisition and distribution of VAC at all levels. Although there seems to have been some distribution of VAC, this was not supported by documents or confirmed by mothers living around the health institutions. Lack of awareness of the importance of VAC supplementation at all levels appears to have been the prime factor contributing to this end. This is not surprising as insufficient advocacy/sensitisation work had been done in the region. The workshops, training and seminars were inadequate, and posters/leaflets were almost unavailable. The guidelines distributed by the MOH in most cases did not reach the health institutions where actual implementation of the programme took place. The few health workers who participated in workshops and seminars have subsequently been transferred or involved in other priorities, since shortage of staff is a crucial problem in the area. Based on these observations the following measures are recommended in order to strengthen the programme.

1. Realisation of the VAC supplementation programme will be effective only if the staff in the health care delivery system are aware of the importance of the programme in substantially improving child survival. Strengthened sensitisation seminars/workshops and training, including all staff directly involved in the programme, should be undertaken. These sensitisation seminars/workshops and training should be supported with various teaching materials, including posters and leaflets.

2. Special emphasis should be placed on training of staff at health institutions where the actual supplementation takes place. The staff at health institutions must clearly understand about the schedule, dosing and side-effects of VAC supplementation. Guidelines should be prepared in the local language (Amharic) and should be available at all institutions.

3. Provision of nutrition education for women regarding the consequences and prevention of VAD is vital and should be strengthened.

4. Regularity of adequate VAC flow to health institutes, both in quality and quantity, should be maintained. This may necessitate training of health workers to plan ahead (to calculate the requirements for respective catchment areas). The request must be forwarded to the zonal health office, and the zonal health office must pass it on to the regional health office. The regional health office will then be able to compile and request amounts required in the region and distribute these according to the zonal requirements. This bottom-top mechanism of capsule requisition and distribution will not only improve regularity but also avoid the danger of capsule expiry.

5. Given that the health care delivery system is already constrained by shortage of health workers it is recommended that other concerned sectors be involved. In particular the envisaged formation of micronutrient committees should alleviate this problem, and should be speeded up.

6. If possible, logistical support, particularly in the form of transport facilities, should be given to health institutions. This will ease the difficulty of transporting capsules from regions to zones, zones to health institutions and health institutions to EPI centres.

7. Reporting formats at individual, institution, zone and regional level should be prepared and distributed. A space should be reserved on the EPI card to be used during EPI contacts. For MCH and other contacts special forms should be prepared.

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