ORIGINAL ARTICLE

Evaluation of The Use of Pregnancy Monitoring Charts by Village Cadres & PKK, A Case Study

by

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Abstract

The use of pregnancy monitoring chart by recording weight gain during pregnancy can be as an indicator of the growth of the fetus. It is easily measurable, simple, easy to undertake even by layman and can be used to select high risk pregnancies in the field.

Using the chart, the selection to give supplemental food to pregnant mothers can be conducted objectively. If the health center has the capability and the resources to do Hb examination, urinalysis, immunization and proper prenatal care, untowards effects for the mother and fetus can be avoided.

With minimal promotive care, i.e. distribution of Fe tablets in the 3rd trimester and supplemental calorie for those who need it, the incidence of low birth weight can be reduced.

Village cadres & PKK can be trained to use pregnancy monitoring charts and are very effective to obtain a total coverage of pregnant women, since they live in the same location and know each other. With these activities the mothers do not need to go to the health centers, which may be far away.
The operation of mobile health centers or subcenters will be supported by this activity.

Although in this case study, the use of pregnancy monitoring charts did proof to reduce the incidence of low birth weights, yet the author suggests to try these charts out in other areas.

Introduction

It is still a fact that adequate prenatal care will improve the state of health of the pregnant mother and the fetus to be born. It also prevents the births of low birth weight babies. However, professionals are needed to conduct proper prenatal care. It is assumed that the minimum type of health personnel in the field to conduct pre-natal, natal and post natal care are mid-wives or health nurses.

The average personnel of a rural health center at the present is a midwife to serve 30 – 40.000 population which means 1.500 – 1.600 pregnancies and deliveries a year. The function of a midwife in a health center is not only to take care of them as she also has to take part in other activities.

For that reason, another type of worker available in the villages are needed, i.e. village cadres and members of the women club (PKK), which has been developed already in almost all villages in the country. A pregnancy monitoring chart has been developed, including the training package. The village cadres and PKK in a subdistrict has been trained.

Evaluation is conducted, firstly to see whether the village cadres and PKK are able to use it, secondly whether the use of preg-nancy monitoring charts is able to reduce the incidence of low birth weights (LBW). It is analysed also which independant variable (factor) is the easiest to intervene to reduce the birth of LBW.

Background Information

Problem.

Pregnancy is one of the elements of a life cycle, a good state of health during pregnancy, will thus become a good starting point for the next generation. It is our duty to provide a healthy environ-ment and condition, if we expect to pro-duce strong and healthy offsprings.

According to the census of 1980 con-ducted by the Central Bureau of Statistics, the pregnancy rate in Indonesia is 3.9% per year, hence out of 150 million popula-tion there will be about 6 million pregnan-cies. All of them need improvement of health. It is estimated that 15 – 20% of them will deliver LBW's (less than 2½ kg), which is circa 1 million (Sarwono, 1977; Karjati et al., 1983). These figures do not

differ much with the description in other developing countries (Shah, 1983) which are quoted in table 1.

The care of LBW's is more difficult than the healthy baby of 3 kg. Small ba-bies are prone to suffer from diseases and tend to have a high mortality due to mal-nutrition in the first year of life. Frequent respiratory and digestive infections are the cause of death (Shah, 1983).

To treat the LBW's, more professional workers are needed in the field, since 80% of the population live in rural areas where health facilities are scarce.The health person-nel pattern scheduled for the third five year plan (1979 – 1984) to employ 9 health nurses in a health center with 30.000 popu-lation remains a plan.

Health facilities.

At the present, a health center in a rural area is staffed by a doctor who is in charge as head of the health center, assisted by a nurse and a midwife. Other junior staff are assistant nurse, assistant midwife and other auxiliaries such as vaccinators, mala-ria worker, sanitarian, home visitors and a clerk. Indeed some health centers has 2 doctors and more nurses and midwives, however it is an exception.

TABLE 1　:　*Group of countries in which the incidence of LBW is more than 10%* .

Group of country	Livebirth (in thousands)	% LBW
Africa		
North Africa	4.540	13
West Africa	6.713	17
East Africa	6.240	14
Central Africa	2.340	15
South Africa	1.248	15
Latin America		
Central America	3.649	15
Caribien	870	13
Asia		
South West Asia	3.840	16
Middle South Asia	11.744	31
South East Asia	12.456	18
World		
Developing countries	104.900	18
Developed countries	17.400	7

Source　:　The incidence of low birth weight, a critical review of available information, World Health Quarterly Statistics 33 : 2 15 (1980).

In the urban area besides the health cen-ters and hospitals operated by the Govern-ment, the private sector play a big role. The doctor population ratio in urban areas is 10 to 15 times the ratio in the rural setting. The development of the hospitals in the towns are fast, according to Tjitrosudirdjo (1981) in 1979 out of the 281 government hospitals, 15% has been changed from type D to type C hospital. In East Java, according to the decree of the Governor, in 1984 all type D hospitals should be upgraded to type C; thus only 5 units remained type D. It means that the basic specialistic health services are available in the regency capitals, i.e. surgery, ob-gyn, internal medicine and paediatrics.

Meanwhile the referral system has been set up, so theoritically specialistic health care delivery is accessible for all people, even in remote areas. However, the referral system can not be enjoyed by the community in the villages, if the health care delivery infrastructure is not well developed to cover the people who need them, and able to detect early cases.

In this study, for the pregnant mothers village cadres and PKK are being utilized.

Targets and activities.

With the increasing needs and demands of the community, the activities in the health centers are double fold. The delivery of health care should include medical care, preventive, promotive and rehabilitative care, in the form of ambulatory treatment, mother and child health, family planning, immunization, nutrition improvement of the community, environmental sanitation, communicable disease control, school health, dental school health, public health nursing, health education, mental health, recording and reporting and laboratorium. With this long list, it is obvious that the work load of a health center may be beyond their capacity.

According to the targets set for the year 2 000 in the national health system (Departemen Kesehatan RI, 1981), it is demanded always to improve the quality and quantity of care, with the indicators as follows :

— Reduce infant mortality rate from 98 to below 50 per 1000 live births.

— Reduce child mortality (1 — 4 years) from 40 to 20 per 1000.

— Reduce the incidence of low birth weights from 14% to 7%.

— Reduce maternal mortality to below 2 per 1000.

The interventions however, should be undertaken in the rural areas, where the majority of the people live and where health facilities and personnel are scarce.

Objects of intervention.

One of the sensitive objects to reach the targets set above is the mother. By increasing the coverage of pregnant mothers, improving the quality of prenatal care, perinatal mortality which is a component of infant mortality can be reduced. By improving the nutritional state of the pregnant mothers, it is expected that the incidence of low birth weights will be reduced, so will the infant mortality, since the morbidity and deaths of small babies are high.

In order to support this activity, due to shortage of professional health workers in the field, village cadres and PKK are recruited instead. They are given training and supervision by showing the clear criteria which are easily seen or measured and the necessary tools.

The criteria given are :

— criteria of selection of high risk pregnancy.

— criteria of weight gain of pregnant mothers, using pregnancy monitoring charts.

— criteria of low birth weight, using scales.

Object of intervention :

— All pregnant mothers.

Tools to be used :

— Pregnancy monitoring charts.
— Weighing scale for adults.
— Weighing scale for babies.

Services expected :

— Improvement of health services, including operation of mobile health center, referral system, drug supply, etc., so that malnourished pregnant mothers can be identified and treated, as well as anaemia in pregnancy, early signs of preeclampsia and untoward conditions of pregnancy.

Methodology

Pregnancy monitoring chart.

Pregnancy monitoring charts are set up, based on the assumption that the weight gain during pregnancy should be 10 kg., whatever the initial body weight of the mother is. In details, during the first trimester the body weight gain is 1½ kg, 2 nd trimester 3½ kg and the 3rd trimester 5 kg, in singletons. In twin pregnancy the weight gain may reach 15 kg. The expected birth weight is 3 kg (Castello, 1962).

With the condition mentioned above, a graph is made, consisting of 4 cured lines (see annex II). If the weight gain follow the graph, a healthy baby with a birth weight of 3 kg is expected. If the weight gain does not follow the graph, a small baby less than 2.5 kg may be born, provided the gestational age is known and correctly plotted in the graph.

The pregnancy monitoring chart has been field tested retrospectively. It was found that the graph can be accepted with a relatively low deviation (Martodipuro, 1982, 1983). Only in a few cases a small baby was born in spite of the fact that the weight of the pregnant mother followed the graph, and on the contrary a low birth weight was not born, although the weight gain of the mother failed to follow the graph.

Training of village cadres and PKK.

Village cadres and PKK are trained to use the pregnancy monitoring chart and given the module to comprehend it further. Besides, they are given scales both for adults and babies. Once a month, they have to gather the pregnant women in their areas, and weight the mothers. On that occasion the midwife of the health center will conduct prenatal care to the mothers.

With this activity all pregnant mothers in the area will be covered, since village cadres know all the mothers in the area. On the other hand, it is not necessary for the mothers to come to the health center, which is sometimes far away from their homes.

Evaluation

After the baby was born, the pregnancy monitoring chart already filled by the village cadres and PKK will be collected for evaluation. The evaluation includes whether or not the history taking was completely recorded by the village cadre or PKK. Was the examination conducted completely? Was the tetanus toxoid immunization complete (2 times)? Was the mother weighed and recorded in the chart ? Are the data of the newborn baby recorded and complete ?

The data collected are divided into 3 periods, April – June 1983 as (T–O), July – September 1983 as (T–1), October – December 1983 as (T–2) and so on. In this report the data of periods (T–O) and (T–1) will be considered.

Result

Since April to December 1983, 201 pregnant mothers were identified and 153 mothers delivered their babies. In the period of (T–O) 56 babies were born, period (T–1) 60 babies and in period (T–2) 37 so far. The pregnancy monitoring chart ideally filled showed a scoring of the following.

TABLE 2 : *Scoring of the components of pregnancy monitoring chart filled in by village cadres & PKK, according to the periods.*

i t e m s	(T–0)	(T–1)
Completeness of history taking	5.6	7
Prenatal care	6.6	8.4
Weighing of mothers	2.1	4.9
Data of the newborn baby	8.3	8

The possible scores varies between 0 – 10 for any component, broken down in completeness of history taking, prenatal care, weighing of mothers and data of the newborn. The results of (T–0) were respectively 5.6, 6.6, 2.1 and 8.3, and of (T–1) respectively 7, 8.4, 4.9 and 8.

From the data collected, another selection was made, i.e. the charts with complete recording of age of the mother, parity, height, weight, Hb content, frequency of prenatal care and birth weight of the baby, to be analized on correlation and regression. The dependent variable is the birth weight of the baby, where as the six other factors were the independent variables.

Out of (T–0), 23 sets of data were available and (T–1) 45 sets. Using the computer of Health Services Research and Development Center (Hewlett Packard 98458)

the computer output was obtained, see annex.

(T–0)

N =23

alpha= 0.05

H_o = No influence between variables

$F_{(0.05)} (d_f ; N-2) = F_{(0.05)} (1; 21)$
= 4.32

$F_{calculated}$: 10.95 F_{table} : 4.32

So, H_o is rejected.

Conclusion : There is influence of body weight of the mother on birth weight of the baby.

The coeficient of influence of body weight is 49.37866.

So, for an increase of one unit of body weight of the mother, an increase of birth weight of 49.37866 is expected.

(T–1)

N   = 45

alpha   = 0.05

H_o = No influence between variables

$F_{(0.05)} (d_f ; N-2) = F_{(0.05)} (1 ; 43)$
= 4.07

$F_{calculated}$: 6.09 T_{table} : 4.07

So, H_o is rejected.

Conclusion : There is influence of body weight of the mother on the birth weight of the baby.

The coeficient of regression for body weight of the mother is 43.31955.

So, for an increase of one unit of body weight of the mother, an increase of birth weight of 43.31955 is expected

Discussion

If we consider the score obtained in periods of (T–0) and (T–1), indeed an increase of score is shown, but the top score is not reached yet. Another promising fact is the increasing coverage of tetanus toxoid vaccination from 36% to 63.3%. Again ideally a 100% coverage should be achieved.

The sets of (T–0) and (T–1) both show that the body weight of the mother influenced the birth weight most. These findings support the assumption that the body weight gain of the pregnant mother can be used as an indicator as well as a target to deliver healthy babies with a birth weight of 3 kg.

This is why it is very important to motivate pregnant mothers to keep up with the curve in the graph. It will be very ideal if supplementary caloreis with or without extra protein is given to the mothers who fails to follow the curve if they are not able to overcome it themselves.

In the analysis, the variable Hb did not show to influence the birth weight of the baby, both in (T–0) as well in (T–1). This is may be due to the fact that 48% in (T–0)

and 53% in (T–1) of the mothers have a Hb content of 70% or less measured with Talquist. Seventy percent Talquist may be considered as 10.5 gr%, which is the cut off figure for anaemia of the pregnant mother. According to Shah (1983) with his experience in India, there is correlation of low Hb content with low birth weight.

From this analysis an impression can be drawn that to increase the Hb content of a pregnant mother is very important. It should be emphasized that nutritious food should be prefered rather than Fe tablets. However, the latter are cheaper.

Experience in the field shows that a lot of mothers refuse to consume the Fe tablets, complaining of an evilsmelling taste of iron and sick feeling. These complaints can be reduced also by giving vitamin C tablets and health education so that they understand the benefits instead of aggravating the inconvenience.

The body weight criteria for Indonesian mothers need some adjustment, the author suggests to take 40 kg instead of 45 kg (Soedigdomarto et al., 1979); Shah (1983)

in India put 38 kg as the cut off. The reason is that too many Indonesian mothers will thus belong to the high risk group and this will burden the professional workers. The more important thing is the body weight gain during pregnancy, it should be around 10 kg.

A weight gain of 6 – 7 kg is considered too low (Thomson, 1983; Karjati et al.,

1983). The criteria for height should also be reduced to 140 cm, instead of 145 cm, with the same reasons.

In this study there was no case yet of a body weight gain more than 10 kg, except in a twin pregnancy. If the feeding habits of the Indonesian mother has changed, the criteria set up above may need reconsiderations.

Acknowledgement

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No.	:	Nama petugas	: ....
Nama isteri	:	Kepala Kelompok	: ....
Pekerjaan	:		....
Nama Suami	:	D e s a	: ....
Pekerjaan	:		....

	< 16 th	> 35 th.		Tinggi Badan < 145 cm	....
U s i a					
Kehamilan		1-3	4>	Berat Badan < 45 kg	....
Anak hidup	0	1-3	4		
Operasi kandungan				Catatan :	
Eklamsi (sawan)					
Penyakit (jantung, ginjal)					
Keguguran berulang					

	Jan.	Feb.	Mar.	Apr.	Mei	Juni	Juli	Agu	Sep.	Okt.	Nov.	Des.	Jan	Feb	Mrt
Tgl. haid terakhir															
Perkiraan bersalin	Okt.	Nov	Des	Jan	Feb	Mar	Apr	Mei	Juni	Juli	Agu	Sep	Okt	Nov	Des

KARTU MONITOR IBU HAMIL

TENSI : s/d

Udem :

Alb :

Hb :

Bulan
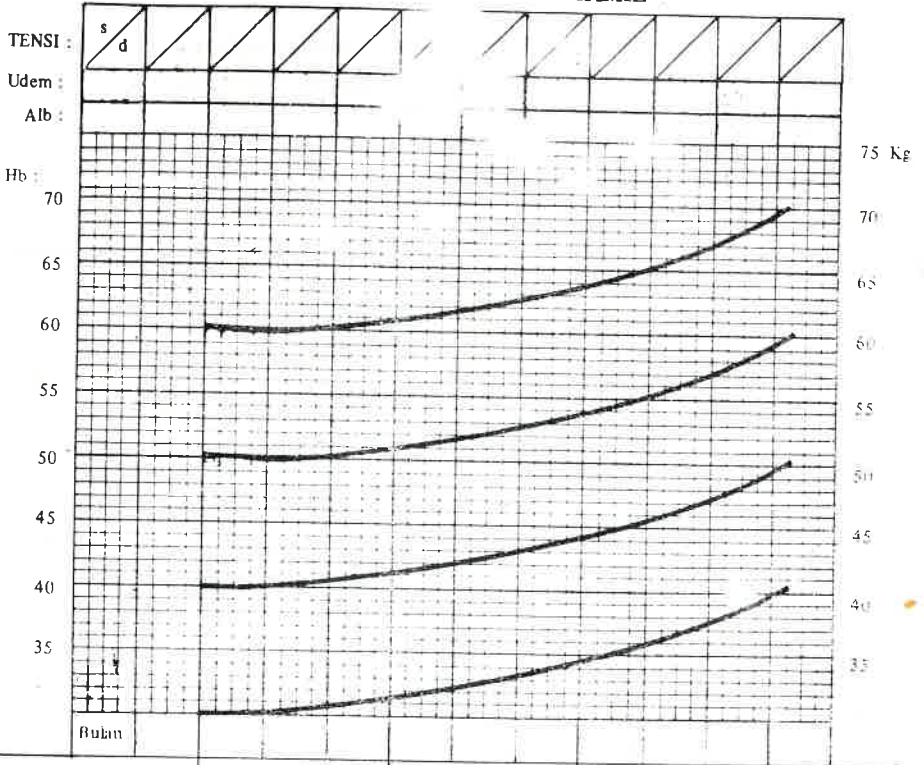
	TRIMESTER I	TRIMESTER II	TRIMESTER III	Lahir Hidup
	Periksa Bidan : 1	Periksa Bidan : 2	Periksa Bidan : 3	Tgl. : ....
	Tgl. :	Tgl. :	Tgl. :	
		TFT : I	TFT : II	
		Tgl. :	Tgl. :	Lahir Mati
			Periksa Bidan : 4	Tgl. : ....
			Tgl. :	
	Keguguran		Lahir Hidup Tgl. :	
	Tgl. :		Lahir Mati Tgl. :	

Lahir Tgl. : ....

Jam : ....

Ditolong oleh: ....

Laki / Perempuan

Berat Badan .... gram

Panjang Badan .... cm