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ASSESSMENT OF THE AVAILABLE OBSTETRICAL RESOURCES , ALL HOSPITALS (40) IN GEZIRA STATE,SUDAN

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Abstract:

Introduction: This study was done for the purpose of assessing the available Obstetrical resources (materials and human) in 40 hospitals in Gezira State, Sudan.The results were used in preparing a major health project; University of Gezira Initiative for Safe Motherhood and Childhood (UGISMC) .The aim of (UGISMC) is to reduce maternal mortality rate (MMR) and perinatal mortality rate (PMR) in Gezira State by 50% in 5 years (2005-0210).

Objectives : are to (1) assess the available delivery resources in all hospitals (40) in Gezira State. (2)to identify deficiencies in the provision of obstetrical care , particular attention was given for the availability of appropriate supplies equipments , facilities and manpower.

Methods: All the hospitals in Gezira State (40) were included in this descriptive observational field survey. All major theatres, minor theatres, labour rooms were visited by the principal investigator and their resources were assessed thoroughly by direct observation, each hospital was assessed in the presence of the medical officer in charge .The relevant information were obtained and compared with the standard lists which were developed and prepared by a group of experts.

Results: In the 5 specialized hospitals all the obstetrical emergencies could managed safely ,namely (Madani ,Hisahisa, Alkamleen, Rufaa, and Almnagil).However, out of the 35 rural hospitals studied, in only(11/34) 33% emergencies could be managed safe, where the facilities are not adequate to deal with obstetrical emergencies and maintain safe delivery .

Conclusion: The majority of rural hospitals are not equipped with enough facility and man power to manage obstetric emergency.

Key words : Gezira , Motherhood ,Childhood ,Initiative ,Mortality.

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Introduction:-

Reduction of maternal and childhood mortalities have been endorsed as a key development goal by countries and is consensus documents emanating from many international conferences.

Every minute of every day, somewhere in the world, a woman dies as a result of complications arising during pregnancy and childbirth, the majority of these deaths are avoidable .Maternal death is a tragedy for individual women, for families and their communities. (1)

Maternal mortality is reduced through antenatal care, delivery care, post delivery care and through total development of the country. Total development of the country involve all sectors and is subject to political , economical and social factors. In fact there is no demarcation between antenatal care ,delivery care and post delivery care, and the same obstetrical problem could be the cause of death at any level. In general antenatal care has been intensively studied and upgraded but the delivery care did not have the same attention. Experience showed that delivery care is substandard at all levels ; home , rural hospital ,and even referral hospital, in addition to other factors that could be due to inadequate resources and inadequate man power in health institutions .The rural hospital is the most important health unit for the management of the complicated deliveries.

The tragedy is that these women die not from disease but during the normal, life – enhancing process of procreation. Most of these deaths could be avoided if preventive measures were taken and adequate care was available. For every woman who dies, many more suffer from serious conditions that can affect them for the rest of their lives. (2,3)

The current global estimates show that in the developing world approximately 65% of pregnant women received at least one antenatal care visit, only 40% of deliveries take place in health facilities, and slightly more than half of all deliveries are assisted by skilled personel. (4) Between 90 and 100 million women do not received postpartum care with the lowest coverage of care during pregnancy and delivery. (5)

It is estimated that nearly two thirds of the 8 million infant deaths that occur each year result from poor maternal health and hygiene, inadequate care ,inefficient management of delivery and lake of essential care of newborn. (3)

According to WHO, the maternal mortality can be reduced through improvement in the management of pregnancy and delivery, including :better aseptic techniques,

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blood transfusion, safe operative delivery ,management of eclampsia, oxytocin and antibiotics. (6)

In Ghana , preliminary studies at Juaben Teaching Health Centre revealed inability to treat obstetrics complications. Women with complications need to be referred to other institution , resulting in delay. During1993-4 an operating theatre and blood bank was established and equipped, the maternity refurbished, and revolving drug fund created. A physician was posted and trained in obstetrics, and midwives were trained in the life-saving skills. The results were ;the number of women with complications coming for care increased almost three fold, surgical obstetrics procedures performed increased , and no death occurred among women treated . (7)

According to Prevention of Maternal Mortality Network(PMM); facility reviews revealed several factors at the district hospital contributing to maternal deaths in Ekpoma District ,Nigeria. In response ,needed equipments for the operating theatre , labour suite, and laboratory was repaired or purchased .A blood bank and standby generator were repaired .Drugs and consumable were purchased and revolving fund established .Refresher courses were held for medical officer ,nursing staff and laboratory technicians .As a result ; the number of women with major obstetric complications seen at the hospital increased from 5% in 1990 to 20 % in 1993.(8)

This study was done for the purpose of assessing the resources (material and human) available for delivery care in 40 hospitals in Gezira State. The results were used in preparing a major health project ;*University of Gezira Initiative for Safe Motherhood and Childhood* , which aims to reduce, maternal mortality rate (MMR) and perinatal mortality rate (PMR) in Gezira State by 50% in 5 years (2005-0210).Particular attention was given for the availability of appropriate supplies equipments , facilities and manpower.

The study was sponsored by the Gezira University.

Materials and method:-

This is a descriptive observational field survey conducted in Gezira State, Central Sudan. All hospitals in Gezira State (40 hospitals) were included in the study, no rule of exclusion. Gezira state, is one of the central states of Sudan, it accommodates Gezira scheme one of the largest irrigated farms in the world. Gezira state follows the health zone system; it has a total of (40) hospitals (35 rural and5 referral hospitals).It has a population of about 3.5 million, distributed in small towns, villages and camps. Gezira State really has been affected by a large number of refugees who escaped from civil wars and natural disasters in Western, Eastern and Southern Sudan, and this has affected the demography of the State for the last few

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years.

Data was collected through direct observation by a well –trained team from the Educational Development &Research Centre ,University of Gezira. The team leader is the principal investigator who is a qualified doctor with experiences in community survey. All hospitals in Gezira State were included .Major and minor theaters , delivery rooms and manpower were assed by using standard lists .A group of experts produced these standard lists (first and 2nd column in Table 1 ,2 ,3,4,5,6) .These lists were checked and endorsed by the Scientific and Research Committee from Educational Development Research Center, Faculty of Medicine University of Gezira.

There were tow major lists:

A. *Lists for the rural hospitals;* distributed as

1-*List for assessment of labour room in the rural hospitals*, for assessing in general; labour room, delivery room, autoclave, boiler, sucker machine , oxygen cylinder, delivery set, forceps, ventose, neonatal resustation set, enema set, neonatal bed, sphygmomanometer, fetal stesthcope , thermometer, cardiac bed, and partogram.

2-*List for assessment of theatre in the rural hospitals*, this list assessed in general; Autoclave , roof lamb, chargeable lamb, anesthetic machine, major operation set, sucker machine, blood transfusion set, evacuation set, electrical generator, pulse oxymeter, refrigerator, sphygmomanometer, stethoscope, adult laryngoscope, adult ambo bag, anesthesia trolley, nitrous cylinder, oxygen cylinder, and operation table.

3-*List for assessment of human resources in the rural hospitals* , this list for the assessment of ; Obs and Gyn consultants, hospital midwife ,theatre attendant, anesthesia assistant, lab assistant, and anesthesia technician.

B. *Lists for the specialized hospitals;* contained:

1-*List for assessment of labour room in the specialized hospitals* , this list contains in addition to the resources mentioned in labour room in the rural hospital; sterilization room, CTG, U/S machine, and Doppler.

2-*List for assessment of the theatre in the specialized hospitals*, those items were assessed in the rural hospitals were included in this list (different number) but some items were added such as; diathermy ,heavy duty machine, and cot.

3-*List for assessment of the human resources in the specialized hospitals* , this list contained, in addition to those mentioned in rural hospital list for human resources (increased numbers); pediatrician, consultant anesthesia, lab technician, and sisters (bachelor degree).

All major theatres, minor theatres, labour rooms were visited by team and their resources were assessed thoroughly by direct observation. Only functional

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equipments were assessed under observation. Each hospital was assessed in the present of medical officer in charge .The relevant information were obtained and compared with the standard lists

Data was analyzed manually and by using the Statistically Packed for Social Sciences (SPSS) for simple frequency and tabulation.

This study was financially supported by Gezira Safe Motherhood and Childhood Initiation ,Research Committee .

Results:

The total number of hospitals included in this study were 40 hospitals, which distributed throughout Gezira State, to provide health services to about 3 million of population. Table 1,2,3, 4,5,6 showed the requirements for safe ostetrical care and safe childhood according to the field survey comparing to total requirements according to the stander lists.

Table(1) Labour rooms in rural hospitals(35)

NO	Item	Standard list /hospital	/35 hospitals	Number available	Percentage available
1	Labour room	1	35	35	100
2	Waiting room	1	35	26	74
3	Toilet	1	35	9	25
4	Delivery table	1	35	31	88
5	Autoclave	1	35	4	11
6	boiler	1	35	28	80
7	Chargeable Lamp	2	70	7	10
8	Sucker machine	1	35	3	8.5
9	O_2 cylinders & accessories	1	35	1	2.8
10	Delivery set	2	70	27	38
11	Forceps	1	35	29	82
12	ventose	1	35	3	8.5
13	Neonate resustation set	1	35	4	11
14	Dutchman (enema set)	1	35	26	74
15	Waiting bed(for mother)	4	140	65	46
16	Neonatal bed	2	70	20	28
17	Sphygmomanometer	2	70	8	11
18	stethoscope	2	70	9	12
19	Fetal stethoscope	2	70	34	48
20	Neonatal	1	35	13	37
21	Thermometer	1	35	9	25
22	Labour chair	1	35	10	28
23	Patients Carrier	1	35	17	48

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24	Cardiac bed	1	35	8	22
25	partogram	-	-	-	0

Table (1) shows the items in the labour room of the rural hospitals, the total requirements in the 35 hospitals according to the standard list. the 4th column shows the total number available in the 35 hospital according to the field survey, and the last column shows the percentage of available items according to the field survey. This table showed that the number of autoclave require are 35, and actually only 4/35(11.4%) are present. The labour rooms in the hospitals studied lack a vital equipments, out of 35 hospital studied the available are only 7/70(10%) chargeable lamb, 3/53(8.5%) sucker machines, 1/35(2.8%) oxygen cylinders, 27/70 (38.4%) delivery sets, 3/35(8.3%) ventose, 4/35 (11.4%) neonatal resustation sets, 20/70(28.5%) neonatal bed, 8/70(11.4%) sphygmomanometer, 34/70 (48.5%) fetal stethoscope, 9/35(25.7%) thermometer, 8/35(22.8%) cardiac bed, and non of the labour room studied has a partogram.

Table(2): Theatres in the rural hospitals

S .no s .no	Resources	Standard list /hosp	/35 hosp	Number available	Percentage available
1	Major operation room	1	35	35	100
2	Minor operation room	1	35	33	94
3	Sterilization room (doctor)	1	35	25	71
4	Dress room	1	35	23	65
5	Waiting room (patients)	1	35	21	60
6	toilet	1	35	21	60
7	Autoclave	2	70	41	58
8	Steam boiler	2	70	50	71
9	Roof lamp	2	70	25	35
10	Side chargeable lamp	2	70	11	15
11	Anesthetic machine	2	70	11	15
12	Major operation set	1	35	21	60
13	Minor operation set	1	35	33	94
14	Sucker machine	2	70	23	32
15	Blood transfusion set	2	70	24	34
16	Evacuation set	2	70	41	58
17	Electrical generator	1	35	28	80
18	Pulse oxymeter	1	35	-	0
19	Equipments trolley	4	140	58	41
20	Refrigerators	2	70	4	5
21	Sphygmomanometer	2	70	14	20
22	stethoscope	2	70	12	17
23	Adult laryngoscope	2	70	2	2
24	Adult ambo bag	1	35	11	31
25	Anesthesia trolley	1	35	4	11

26	$N0_2$ cylinder	10	350	9	25
27	O2 cylinders	10	350	10	2
28	Operation table	2	70	25	35

Table (2) shows the description of the theatre in the rural hospitals and total requirements according to the standard lists, the 4th column shows the total number available in the 35 hospitals according to the field survey and the last column shows the percentage of the items available according to the field survey. There is severe shortage in important medical equipments, out of 35 theatre studied only few number are available; 41/70(58.5%) autoclaves , 50/70(71.4) steam boilers , 25/70(35.7%) roof lamb, 11/70 (15.7%) chargeable lambs, and 11/70(15.7% anesthetic machines .Also there is shortage in medical equipment 21/35(60%) major operation sets, 33/35(94.2%) minor operation set , 41/70(58.5%) evacuation set, 14/70(20%) adult laryngoscope 2/70(2.8%) sphygmomanometers), 9/350(25.7) nitrous oxide cylinders , 10/350(2.8) oxygen cylinders , 25/70(35.5%) operation table, and out of 35 hospital studied has pulseoxmitre 0/35(0%).

Table (3): Human recourses in the rural hospitals

S.No.	Human resources	Standard /hosp	list /35hosp	Number available	Percentage available
1	Obs Gyn consultant	1	35	4	11.4
2	Health visitor	2	70	64	91.4
3	Hospital midwife	2	70	21	30
4	Theatre attendant	6	210	86	40.9
5	Anesthesia assistant	1	35	35	100
6	lab assistant	1	35	14	40
7	Medical practitioner	1	35	39	111
8	Anesthesia technician	1	35	0	0

Table (3)shows the human recourses that require to maintain safe delivery care according to standards list and available number and percentage according to field survey. Out of 35 hospital studied only 4/35(11.4%) have Obs &Gyn consultants, 35/35(100%) anesthesia assistants, 21/70(30%) hospital midwifes and 14/53(40%)

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laboratory assistants.

Table(4) :labour room in specialized hospitals (5)

No	Recourse	Standard lists /hosp.	/ 35 hosp.	Number Available	Percentage available
1	Waiting room (10 beds)	10	50	14	28
2	labour room (4 table)	4	20	12	60
3	Toilet	1	5	2	40
4	Sterilization room	1	4	2	50
5	Delivery set	10	50	5	10
6	Forceps	3	15	7	46.6
7	ventose	1	5	1	20
8	sucker	2	10	5	50
9	Chargeable lamp	2	10	5	50
10	Mother beds	10	50	28	56
11	Delivery table	4	20	9	45
12	Neonatal bed	4	20	7	35
13	Sphygmomanometer	6	30	2	6
14	Stethoscope	6	30	3	10
15	Fetal stethoscope	6	30	6	20
16	Neonatal weight	2	10	2	20
18	Enema set	4	20	4	20
19	O_2 cylinders	4	20	-	0
20	CTG	1	5	-	0
21	U/S Machine	1	5	-	0
22	Cot	1	5	-	0
23	Doppler (fetal H.S.)	1	5	2	40
24	Autoclave	1	5	2	40
25	Steam boiler	2	10	2	20
26	Thermometer	10	50	2	4
27	Delivery chair	4	20	3	15
28	Cardiac bed	1	5	3	60
29	partogram	-	-	1	20

Table (4) : According to the field survey, this table describes the available resources in the labour rooms in the 5 standard hospitals in compare with standard needs for this hospitals, although these hospitals should receive and manage the obstetrical emergencies that refer from the rural hospitals. Out of 5 hospital studied only

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5/50(10%) delivery set , 7/15 (46%) forceps, 5/10(50%) sucker machine, 5/10 (50%) chargeable lamb. Non of the 5 standard hospitals studied have either neonate resustation set, oxygen supplements ,CTG , ultrasound machine , and partogram .

Table (5) show the theatres in specialized hospitals.

No	Recourse	Standard lists /hosp	/35 hosp	Available number	Available percentage
1	Major operation room	2	10	8	80
2	Minor operation room	1	5	5	100
3	Sterilization room	2	10	6	60
4	Dress room	1	5	5	100
5	Toilet	1	5	5	20
6	Resustation room	1	5	3	60
7	Autoclave	3	15	5	33
8	Steam boiler	4	20	6	30
9	Operation table	3	15	10	66
10	Roof lamp	3	15	9	66
11	Side chargeable lamp	6	30	2	6
12	Anesthetic machine	3	15	6	40
13	Major operation equipment set	6	30	12	40
14	Miner operation equipment set	6	30	8	26
15	Sucker	6	30	5	16
16	Diathermy	2	10	2	20
17	Oxymetre	2	10	2	20
18	Electric generator	1	5	5	100
19	duty machine	1	5	1	20
20	Instrument trolley	10	40	10	25
21	Refrigerator	4	20	4	20
22	laryngoscope set	6	30	4	13
23	Adult ambo bag	1	5	3	60
24	O_2 cylinder	20	100	38	38
25	No_2 cylinder	20	100	10	11
28	Evacuation set	10	50	6	12
29	Neonatal resusciation set	2	10	0	0
30	cot	2	10	2	20

Table (5): This table shows the standard lists for theatre in the specialized hospital and the available number and percentage according to the field survey .Out of 5 theatres studied only 5/15(33%) have autoclaves, 6/15 (40%) anesthetic machines, 12/30(40%) major operation set, 8/30 (26.6%) minor operation sets, 2/10 (20%)

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diathermy , 2/10 (20%) oxymeter. Non out of the 5 standard hospitals studied has neonatal resuscitation set.

Table (6) human resources in specialize hospitals

No	human Recourse	Standard lists /hosp	/5 hosp.	Available number	Available percentage
1	Consultant Obs Gyn	2	10	20	200
2	Pediatrician	1	5	14	280
3	Medical practitioner	4	16	20	125
4	Health visitor	2	10	6	60
5	Hospital midwife	12	60	59	98
6	Operation attendant	6	30	20	66
7	Cons. anesthesia	1	5	0	0
8	Assistant anesthesia	6	30	12	40
9	Lab technician	4	20	15	75
10	Sisters(bachelor degree)	4	20	5	25

Table (6) Showed the human recourses, 2nd column showed the total requirements in the 5 specialized hospitals according to the standard lists, the 4th column showed the total number available in the 5 hospitals according to the field survey and the last column showed percentage the percentage available according to field survey. Non of the 5 hospitals studied 0/5 (0%) has consultant of anesthesia, and only 5/20 (25%) has sisters, and other human resources are quite enough.

Table (7) Assessment of requirements of obstetrical emergencies in rural hospitals

No	Items	Available Number	Available percentage
1	Obstetrician	4	11.4
2	Labour room	35	100
3	Operation table	25	35.7
4	autoclave	41	58.5
5	Anesthesia machine	11	15.5
6	Facilities for blood transfusion	24	34.2
7	Technician anesthesia	0	0

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According to criteria were presented in the project of Gezira Initiative Safe Motherhood :a hospital can undergo surgical obstetrical emergencies should include ;labour room, theatre containing (table ,autoclave, anesthetic machine , facilities for blood transfusion) and anesthesia technician, and obstetrician According to these criteria we found that the 5 specialized hospitals can undergo the obstetrical emergencies safely ,namely(Madani ,Hisahisa, Alkamleen, Rufaa, and Almnagil Hospitals).But only 33% of the rural hospitals can undergo the obstetrical emergencies as showed in table (7).

Discussion

Experiences from successful maternal health programs showed that much of sufferings could be avoided if all women had the assistance delivered by an skillfull health personnel during pregnancy and delivery ,and access to emergency medical care when complications occurred .[9]

According to criteria presented in the project of *Gezira Initiative for Safe Motherhood and Childhood*, we found that the specialized hospitals can undergo the obstetrical emergencies, However, out of 35 rural hospitals studied only 33% can undergo the obstetrical emergencies, where the facilities are not adequate to deal with obstetrical emergencies and maintain safe delivery. Referral system should be followed in managing the obstetrical emergencies in the rural hospitals where the facilities are not adequate to maintain safe delivery (table 7).

In the country as a whole, the percentage of births attended by skilled health professional has increased by more than a quarter –that is,from 42% to 53% over the decade .Unfortunately in Africa where maternal mortality is highest ,the level has not improved substantially half of all births in the developing world are not assisted by skilled health person ,in 2000 only 42% of births attended by skilled personnel in Sub-Saharan Africa.[10] A recent meta-analysis of 60 studies showed that training traditional birth attendants was associated with significant improvement in performance and mortality. [11]

Our study showed that the medical instruments are not adequate to maintain safe delivery ,this possibly due to the fact that there is no regular supply .Another important issue is human recourses , inspite of the availability in the specialize hospitals but they are not well distributed. Regarding the rural hospitals there is shortage in the consultants, hospital midwife, theatre attendants, lab assistant ,anesthesia technicians, regular and advance training .

Although there evidence that maternal mortality can be reduced without first achieving a high level of economic development ,in fact ,maternal mortality itself

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constrains economic development because of its sever impact on the life of young children ,the family , and society in general.[12]

Most maternal and neonatal death take place at home, beyond the reach of health facilities. Current international policies emphasise the provision of skilled birth attendants and improvement of the the obstetric services in health facilities as key intervention to reduce neonatal and maternal mortality.[13] The Averting Maternal Death and Disability Programme goes further in arguing for a primary focus on the development of emergency obstetric care at district hospitals.[14]In a dissenting appendix to a recent global review,Abhay Bang questioned an approach based on skilled attendance and institutional delivery.[15] Bang and colleagues showed a 62% reduction in neonatal mortality in rural India through training of traditional birth attendants .[16] Other study in Nepal showed a 30% reduction in neonatal mortality and, significant reduction in maternal mortality.[17] Also china reduced its maternal mortality [18] .Yet 41 of 47 countries in Africa still have maternal mortality above 350/100 000 ,as do most countries in South Asia.[19]

WHO/African Region (The challenge of the New Millennium in the African Region) reported that if there are no changes in health services resulting in improved maternal health , losses from deaths and disabilities will be 2.5 millions maternal deaths, 7.5 millions child deaths, 49 millions maternal disabilities, and productivity losses will be :$22 billions loss due to maternal deaths , $23 billions loss due to disabilities ,and$45 billion productivity losses.[20]

A large proportion of maternal and perinatal deaths may results from poorly managed deliveries, and many such deaths could be avoided if suitable care were given. [21, 6]

Conclution:

The majority of rural hospitals are not equipped with enough facility and manpower to manage obstetrical emeregencies, so, improving obstetric care, manpower training and up-grade the hospitals and supplement with medical instruments should remain a core element of safey Motherhood and Childhood Gezira Initiatiative.

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