

# Evaluation Of The Human And Material Resources For The Resuscitation And The Essential Care Of Newborns In Public Reference Hospitals In Burkina Faso

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## Abstract

Background: Perinatal mortality is a major problem in public health in Burkina Faso. This article aims at estimating the human and material resources for the resuscitation and the essential care of newborn children in three reference regional hospitals of Burkina Faso.

Method: We conducted a transverse descriptive study in the regional hospitals of Koudougou, Dédougou, and Dori. The data were collected from January 5 to 17, 2015. The available material (equipment) for neonatal resuscitation and the essential care of the newborns during birth was listed and estimated. The knowledge and the practices of 91 agents of health regarding resuscitation, essential care of the newborn child at birth, and their job satisfaction were recorded.

Results: Two regional hospitals had a pediatrician and a gynecologist-obstetrician on staff. The number of staff specialized in neonatal resuscitation was acceptable but the special knowledge and the practice of mechanisms of resuscitation as well as the essential care of the newborn child were badly mastered. However, 67 (73,93 %) staff members were satisfied by their work. One regional hospital had the minimally required equipment and the staff displayed good quality care.

Conclusion: The capacity of these public sanitary reference trainings regarding resuscitation and essential care of the newborn child at the birth is low. To reduce the neonatal mortality, the subsidy of these sanitary structures is imperative in order to achieve good quality and adequate equipment as well as strengthening the skills of the staff.

## INTRODUCTION

In 2011, sub-Saharan Africa had the highest mortality rate with 34 neonatal deaths per 1000 live births [1, 2, 3, 4]. The fourth objective of the Millennium Development Goals (MDG4) which aimed to reduce by two thirds the mortality rate among children under five by 2015 will therefore not be reached given the low annual decline in the mortality rate [5,6].

In 2006, to accelerate the efforts to reach this goal the Government of Burkina Faso has decided to subsidize the direct cost of normal births as well as Emergency Obstetrical and Neonatal Care (EONC) by 80% [7]. Despite this effort

to reduce the financial barrier, neonatal mortality was still high in 2010 (28 deaths per 1,000 live births) and the majority of these deaths occurred within 48 hours following birth [8,9].

Initiating emergency measures are needed to prevent death and provide a better quality of life for newborns. The emergency actions require the continued availability of adequate infrastructures, adequate and functional material, and especially the training and availability of a skillful health workforce able to effectively resuscitate a newborn and administer essential care [10].

It therefore seemed appropriate to us to evaluate the human

and material resources for reanimation and the basic care of the newborn at birth in public hospitals of reference to determine the process of implementation and redefinition of strategies of the protection of newborns in Burkina Faso.

## **MATERIALS AND METHODS**

We conducted a descriptive cross-sectional survey in three regional hospitals of Koudougou, Dedougou, Dori chosen at random among the 9 regional hospitals in the country. The regional hospitals are the second level of care in the health system in Burkina Faso. They are referral hospitals for 1st level hospitals. Data collection took place from January 5 to 17, 2015 by two investigators (a doctor and a PhD student) who have been trained on data collecting techniques and who have acquired sound mastering of reanimation procedures and newborn essential care. In each site, the investigators had two days for collecting data. An informed consent form was filled out by the health workers before any participation in the study. Anonymity and confidentiality in the collection and processing of data were well mentioned in the consent form.

Sampling was comprehensive: all health workers in maternity and pediatric services on official duty (employed by the hospital) and who were present during the Interviewers passage (Table 1) received the anonymous self-administered questionnaire that they had to fill out and give back right away or within 24 hours at the latest. This questionnaire is derived from the one used for SARA investigations (Service Availability and Readiness Assessment) recommended by the WHO in order to assess the level of satisfaction of health workers. The studied variables were the availability of tools, framework, workload and tasks, the agreement to work, continuing education, as well as management and the moral satisfaction of health workers.

The observation of the newborn care was made passively and concerned the midwife and skilled birth male agents at the workplace. All the newborns, born alive during the interviewers' stay received one observation. The observation grid was structured as a checklist of actions that the provider should perform and directed questions to assess the level of knowledge of the provider.

Using a grid for assessing the medical technical equipment, the interviewers were able to observe the available material and check its functionality and quality. The minimum predefined equipment was as follows: reanimation table,

electric vacuum cleaner, oxygen system, hood oxygen mask, ventilation bag, intubation kit, venous cannulation kit, baby scales, stopwatch, medical stethoscope, EONC Kit (solute and drugs), as well as scissors and tweezers. The tests of the Yates Chi2 were used to compare categorical variables with a significance level of 5%. The study received approval from the General Secretary of the Ministry of Health for data collection in these regional hospitals. Anonymity and confidentiality of newborns' data, interviews with staff have been respected.

## **RESULTS**

Out of 101 health workers who received the self-administered questionnaire the response rate was 90.0% (91 workers). During the stay of the interviewers, 27 deliveries of newborns were observed and monitored. All agents (midwife and skilled birth agents) who made these deliveries agreed to be observed. In these hospitals in 2013 the following number of live births was registered: Koudougou (2136), Dédougou (1063), Dori (783) as shown in table 1.

The table 2 summarizes the main material evaluated in surveyed regional hospitals.

None of the regional hospitals did have table covered with leatherette clean in delivery rooms.

Only one regional hospitals had the minimum surgical material. None of the regional hospitals did have an umbilical catheter. All the regional hospitals had number 6 and number 8 inhalation or feeding catheters. All the regional hospitals had at least ten health products and medical consumables and a complete EONC kit with infusion bags containing 10% hypertonic glucose, alcohol, eosin, calcium chloride, calcium gluconate, potassium chloride, injectable phenobarbital, sterile gloves, 1mg adrenaline, bicarbonate serum 42 ‰, sterile compresses, vitamin k1 aqueous form, cotton linens, antibiotic eye drops, and antibiotics (amoxicillin clavulanic acid, ceftriaxone, gentamicin, kéfotax).

The number of workers who answered the questionnaire was 91 with a sex ratio of 0.71. These workers who were surveyed were divided into 39 (42.85%) midwife and skilled male birth agents, followed by 33 nurses (36.26%) and 6 general practitioners (6.5%).

Their average age was 32 years with extremes of 24 to 44 years. Providers' seniority in their profession ranged from 1 month to 31 years with an average of 5 years 2 months for

the three regional hospitals. The majority of providers (87 = 95.56%) worked full time in their respective service.

Table 3 reports the job satisfaction of the three regional hospitals staff.

Thus it was noted that 67 (73.93%) of the workers of the three providers regional hospitals were satisfied or very satisfied with their work. Regarding their level of competence in neonatal reanimation and newborn essential care 76 (84%) of the health workers who were interviewed said that newborns have systematic complete care at birth (Apgar score evaluation, breastfeeding, node cord, administration of vitamin K1, umbilical care, antiseptic eye drops, complete physical examination, measurements, postnatal monitoring).

83 of them (91%) felt they had acceptable knowledge of reanimation of the newborn and a good level of knowledge in neonatal reanimation.

A total of 27 deliveries were observed. 17 agents (62.96%) consulted the file of the mother before delivery. In 6 cases (22.22%) midwife and skilled birth male agents correctly listed the four basic needs of the newborn (breathing, being warm, being fed, being protected).

Only one agent (3.7%) correctly administered immediate newborn care: announced the time of birth; set the child on the mother's stomach; immediately dried the child with care and controlled his breathing; wiped the baby's eyes; got rid of the linens; applied antibiotic eye drops in the eyes; covered / wrapped the child in a cloth; clamped / tied and cut the umbilical cord and kept the cord clean and dry; administered vitamin K1 (half a bulb 5mg); let the child on the mother's chest in skin against skin contact; covered the child's head with a cap; covered the mother and child with a blanket; encouraged breastfeeding.

Concerning the signs of danger of the newborn 16 workers (59.26%) searched for it and 4 (14.81%) met the standard precautions and hygiene. Only 4 agents (14.8%) put the newborns under breastfeeding following birth. It was noted that 15 health workers (55.56%) provided appropriate advice to the mother after delivery. Nineteen mothers (72.37%) adopted a good position for breastfeeding and 20 newborns (76.29%) benefited from a good breast holding.

**Table 1**

Distribution by qualification of the staff used on three regional hospitals

Regional Hospital	GO	PED	GP	M/S	N	PM	AH	Total
Dédougou	1	1	2	23	21	3	7	58
Koudougou	2	1	3	22	14	0	5	47
Dori	0	0	2	16	17	0	12	47
Total	3	2	7	61	52	3	24	152

GO: gynecologist-obstetrician; PED: pediatrician, GP: general practitioner; M/S: midwife/ skilled male birth agents; N: nurse; PM: patented midwife; A H: attaché of health

**Table 2**

Available equipment on three regional hospitals and its quality

Equipment	Number	Good
	quality	
Reanimation table	3	0
Suction	3	3
Oxygen	3	0
Oxygen mask	2	2
Ventilation bag	0	0
Equipment for intubation	3	0
Equipment for venous catheterization	3	3
Equipment for umbilical catheterization	0	0
Baby scales	3	0
Chronometer	1	0
Medical stethoscope	3	1
EONC kit	3	3
(Solutions and medicine)	3	3
Scissors and crowbars (pliers)	1	0

**Table 3**

Professional satisfaction of the persons involved ( n=91 )

Items	Dissatisfied	Satisfied	Very satisfied
Tools and working environment	31,11 %	41,38 %	27,50 %
Workload	26,72%	32,29 %	40,97 %
Task	16,66 %	31,66 %	51,66 %
Agreement in the work	20,55 %	27,77 %	51,66 %
In-service training	35,00 %	33,05 %	31,94 %
Management	38,88 %	33,35 %	27,77 %
Morale satisfaction	13,44 %	29,41 %	57,14 %
Average	26,05 %	32,70 %	41,23 %

## DISCUSSION

Our pilot study was conducted only in three out of nine referral hospitals in Burkina Faso in order to proceed with an assessment of reanimation and essential newborn care at birth by lack of financial support. However this study could be the basis for the evaluation of other structures. In our study, one out of three regional hospitals had effective medical functional equipment. Azoumah in Togo [11] found that only two of the eleven hospitals had a reanimation table and a heater. None of the three regional hospitals did not have a neonatology unit despite the high frequency of newborns in these centers.

The same was reported by Mbwele in Tanzania which noted that the 13 hospitals in the northern Kilimanjaro region lacked adequate material and had no neonatology unit despite a prematurity rate of 45.6% [12].

A successful reanimation can only be done with functional materials [10]. Nevertheless our activities are marked by a shortage and poor quality of reanimation equipment due to insufficient budget allocated to the health sector. This is the case at the Koudougou regional hospital where the presence of an incubator was found which was not yet functional because the equipment was incomplete.

All the regional hospitals had No. 6 and No. 8 inhalation catheters. This was not the case in Togo where Azoumah found that two centers did not have inhalation catheters with calibers appropriate for newborn [11]. These No. 6 and No.

8 inhalation catheters and a vacuum cleaner are essential for reanimation at birth and must be permanently available and functional.

All the three regional hospitals had at least ten health products and medical consumables which was not the case in Togo and Ouagadougou [11,13]. Thanks to the EONC grant hospitals are now equipped with products and medical consumables needed for the care of the newborn. However, sometimes shortage occurred because of poor stock management. Indeed all the regional hospitals had full EONC kits. This is not the case in Ouagadougou where Ouédraogo noted that problems with drug supplies, medical supplies, and failure of laboratory and imaging machines were very common due to the complexity of the administrative procedures and a lack of preventive and corrective maintenance of the appliances. In addition, she mentioned that training providers was necessary for appropriate use of protocols and rationalizing of medicines and prescription of consumables [13].

The Dori regional hospital had a larger number of pediatric health workers (33 agents) compared to the two other regional hospitals. They contract staff of a non-governmental organization in order to overcome the deficiency in staff [14]. The management of newborns requires qualified and sufficient staff. Our study covered pediatric and maternity services which had too few general practitioners and specialists despite the government's efforts in recent years. Indeed, the regional hospital are not sufficiently equipped to attract doctors and the lack of additional financial incentives for specialists make most of them remain in the capital. The existence of regional public health schools in these regions also explains the relatively high number of nurses and / or midwives in these health centers. Measures should be taken for frequent retraining and motivation of these health workers who practice in these areas. Most providers had little work experience and benefited from training or retraining. This reflects the deficiency in knowledge and practices of providers in immediate neonatal care as only 6 midwives (22.22%) and skilled birth male agents have correctly listed the four basic needs of the newborn. [10]

Only half of the 16 agents (59.26%) looked for danger signs of the newborn and 4 (14.81%) did not follow the standard precautions and hygiene. This explains the often poor results of reanimation [1, 3,4].

Regarding the essential care of the newborn at birth, only

one agent (3.7%) correctly administered immediate neonatal care. This figure is alarming because many efforts are still needed for the systematic administration of routine care of the newborn at birth [7.15]. This low percentage may be due to disruptions in medical supplies and drugs, a lack of trained personnel, and inadequate training for essential care like in Ouagadougou. [13]

Only 17 mothers (62.96%) were consulted before delivery and midwives / skilled birth male agents have given appropriate guidance only to 15 mothers (55.56%). For a good practice of service benefits is more than urgent that providers receive regular training but above all that the correct application of this acquired knowledge is performed under regular supervision. EONC should be able to conduct these measures especially since the financial barrier probably may soon be non-existent if the grant increased to 100%.

In our study, we found that 67 providers (73.93%) of the three regional hospitals were satisfied or very satisfied with their work (tools and work environment, workload, mutual understanding at work, job, continuous training, management, moral satisfaction). However, they were not satisfied in 24 cases (26.05%) and made suggestions. In these three centers they were asking for the establishment of a neonatal unit well equipped with equipment and medical consumables and retraining of the staff on neonatal emergency and essential care.

In addition, at Dori, the staff requested the assignment of a pediatrician to the center, in Koudougou, the expansion and equipping of the neonatology room as well as the assigning of a medical and paramedical staff specific to the neonatal unit to make the reanimation of the newborn and neonatal care a full training module.

## CONCLUSION

In the three second level hospitals of reference we found inadequacies of medical equipment and staff skills. The suggestions and recommendations of CHR personnel should immediately be taken into account to improve newborn survival. It is desirable that this study is repeated in the other 6 regional hospitals to better understand the entirety of the problem.

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