

Prevalence & Risk factors for Birth Asphyxia in Goroka Provincial Hospital



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Introduction

- Birth Asphyxia – WHO
 - “the failure to initiate and sustain breathing at birth”
- Asphyxiated neonate: (American College of O&G and American Academy of Paediatrics – 1996)
 - Umbilical cord pH of < 7
 - Apgar score of 0 – 3 for longer than 5 minutes
 - Neurological manifestations (e.g. seizures, coma, or hypotonia)
 - Multi-organ dysfunction e.g. cardiovascular, gastrointestinal
- Apgar score and neurological manifestations have been used as criteria for the definition of birth asphyxia in our setting
- BA remains a great problem worldwide especially in Developing countries

Background Research

- From the 2016 PNG Morbidity and Mortality Report:
- *“There were 1478 hospital admissions due to birth asphyxia, and the CFR was 19.3% (285 of 1478). 51% of neonatal deaths were due to or associated with perinatal asphyxia.”*

Author Country	Place of Study	Definition	Findings (Risk Factors) Morbidity/Mortality	Incidence/ Mortality
Oswyn G et al PNG 2000	Tertiary Hospital	Apgar <6 at 5 min Abnormal Neurological manifestations	Previous still births Foetal Heart abnormalities PROM Maternal Fever Pre-Post term Operative deliveries	5.5 per 1000 31%
Anne CC Lee Nepal 2007	Community Based	All births	Low paternal education, Primiparity, multiple births, maternal fever	10.5 per 1000
Chayask et al Thailand 2014	Tertiary Hospital	Apgar <7 at 1 min	Moderate or thick meconium Breech presentation Sedations Preterm delivery	

Aims

- To determine the prevalence of BA in GPH
- To identify what the risk factors for BA are, be it antenatal, perinatal or post partum

Methodology

- **Study setting and study design**
 - A cross sectional study was conducted at the SCN GPH from Feb - July 2017
- **Inclusion Criteria**
 - BA cases that are born and admitted to the SCN GPH only. .
 - Apgar score of <7 at five minute.
- **Exclusion Criteria**
 - Neonates born at home/village (BBA)
 - Neonates with congenital defects.

Methodology Cont.

- **Study Sampling and enrolment**
 - A standardised data extraction sheet was used to collect mother and newborns details both antenatal, labour and post natal
- **Data Processing and Analysis**
 - Microsoft Excel
 - Stata Statistics Software

Results

- Total number cases = 52
- Total deliveries (Feb – July) = 2200
- Total admission to SCN (Feb- July) = 353
- Prevalence Rate BA = 2.4%
- Deaths =12
- CFR $12/52 = 23\%$



Table 1: Characteristics of Newborns with BA

Variable	No	%	Variables	No	%
Sex			Apgar at 5 min		
Male	39	75	4-6	44	85
Female	13	25	1-3	8	15
Birth Weight			Resuscitated		
LBW (<2500g)	9	17	Yes	46	88
Normal (2500 – 3999g)	40	77	No	6	12
Macrosomic (>4000g)	3	6			
Gestational Age			Mode of Delivery		
Pre-term (<37 wks)	6	11	NVD	32	62
Term (37-42 wks)	40	78	Vacuum	9	17
Post-term (>42 wks)	6	11	C/Section	11	21

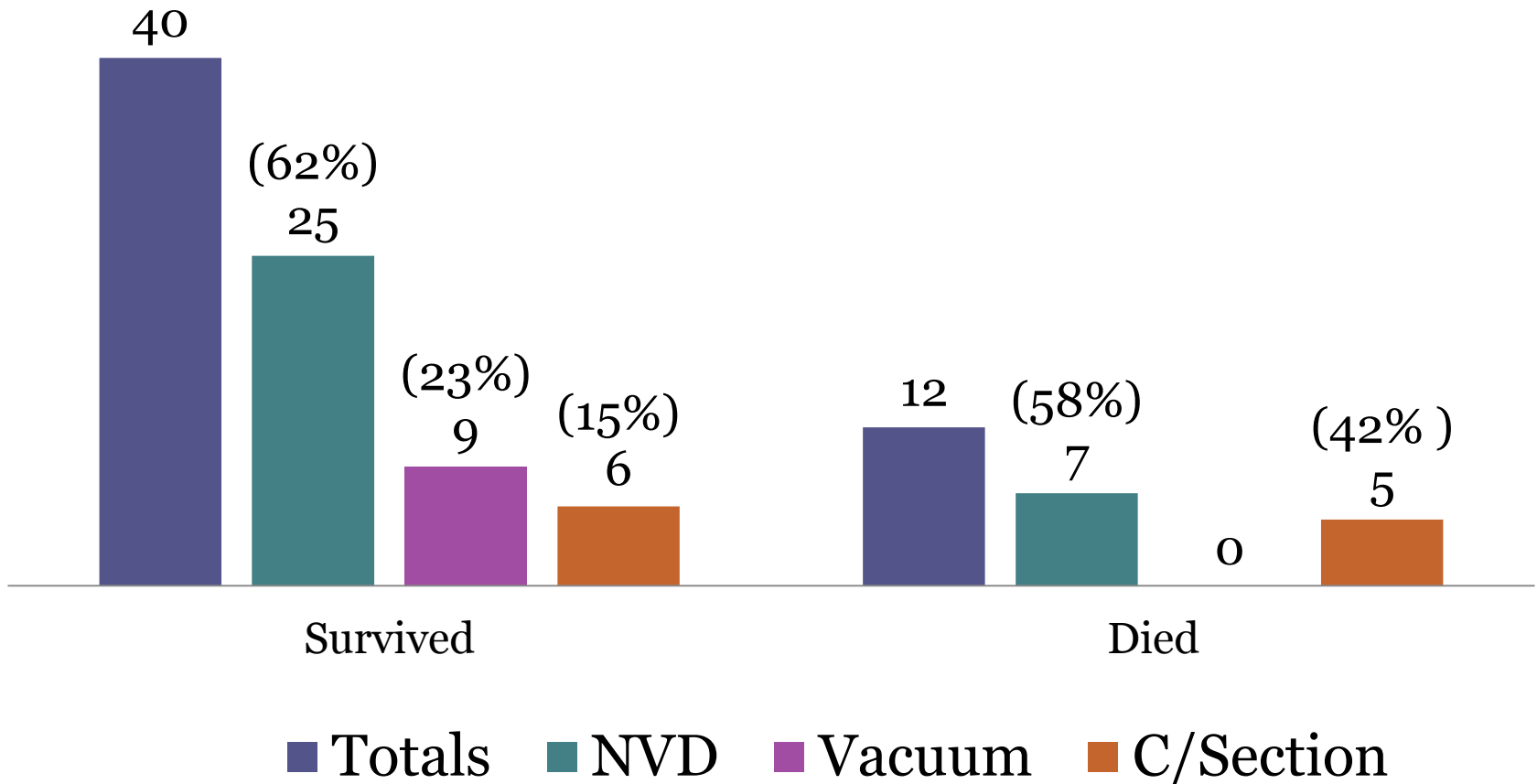
Table 2: Mothers Characteristics

Variables		Freq	%
	<19 years	8	15
Mothers Age	20 – 30 years	34	66
	>30	10	19
Pregnancy Quality	Primiparous	28	54
	More than one Pregnancy	24	46
Previous Miscarriages		1	2
Previous Still Births		1	2
Previous C/Section	(Cord Prolapsed)	1	2
Polyhydramnioius		1	2

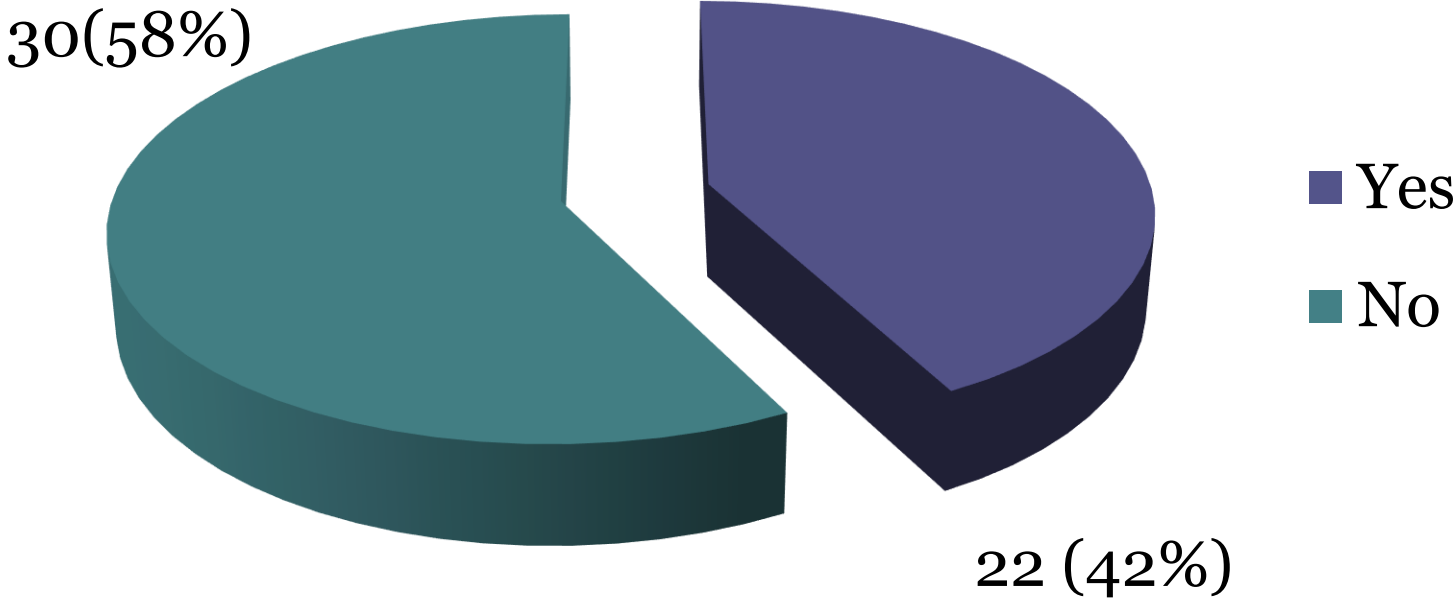
Table 3: Outcomes of BA

	Freq	Survived		Died	
Apgar 1 -3 at 5 min	8	4	8%	4	8%
Apgar 4 – 6 at 5 min	44	36	69%	8	15%
Premature	6	4	8%	2	4%
Term	40	30	58%	10	19%
Post Term	6	6	12%	0	
Low Birth Weight	9	7	13%	2	4%
Normal	40	30	58%	10	19%
Macrosomic	3	3	6%	0	
Meconium stain	40	31	60%	9	17%
No Meconium stain	12	9	17%	3	6%

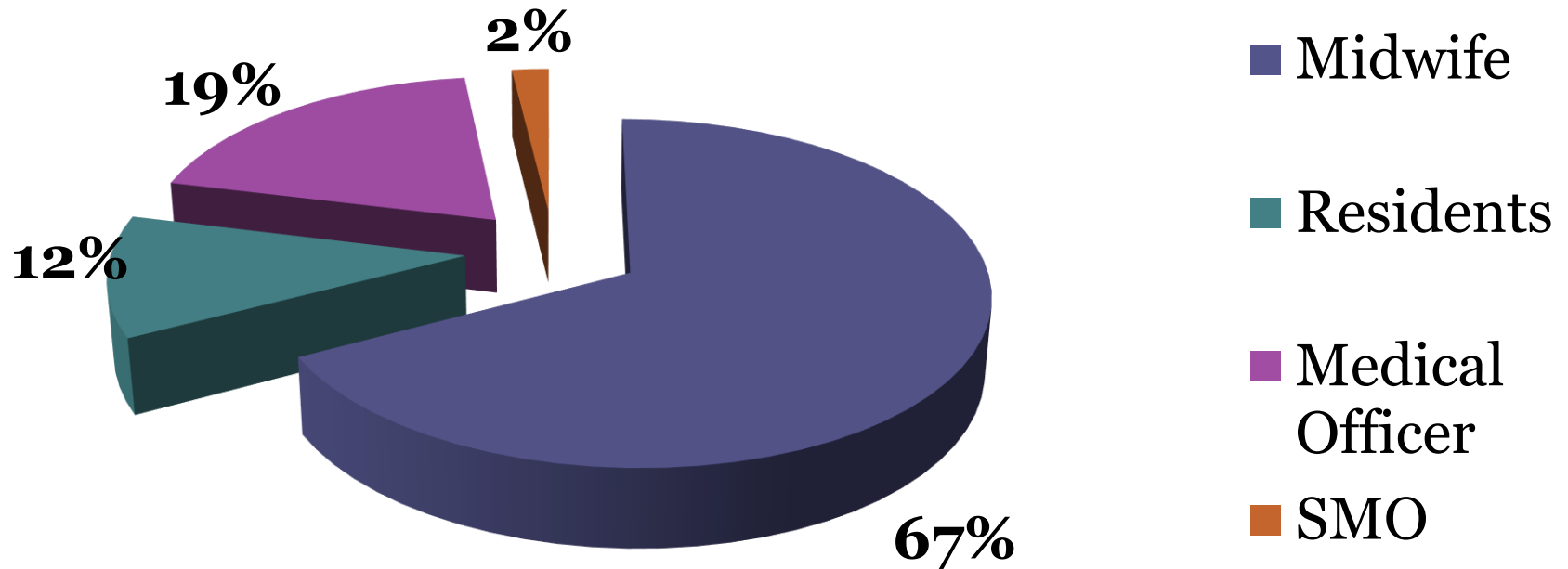
Graph 1: Outcome vs Mode of Delivery



Graph 2: Partogram Use



Graph 3: Delivery by



Effect of Apgar score on mortality

Apgar at 5m	Survived	Death	Total
1	0	1	1
2	4	2	6
3	0	1	1
4	4	4	8
5	11	4	15
6	21	0	21
	40	12	52

Fisher's exact = 0.001

Using multi-variable analysis Apgar at 5 mins was the strongest predictor of death

Discussion

- % of BA admissions = 14.7%
- Prevalence = 2.4%
- Mortality from BA $12/52 = 23\%$
- Risk Factors for BA
 - Primiparous (*Anne CC Lee Nepal 2007*)
 - Meconium stain (*Chayask et al Thailand 2014*)
 - Apgar <6 for more than 5mins

Discussion Cont.

- Outcome vs Delivery
- No partogram – 58% (30/52)
- As you would expect the majority (35/52) or 67% deliveries were done by Midwives
- Effect of Apgar score on mortality – inverse relationship
- Further complex analysis to be done in DCH thesis

Conclusion

- Prevalence = 2.4%
- Risk Factors for BA
 - Primiparous
 - Meconium stain
 - Apgar <6 at 5 min
- 58% of mothers where not on a partogram in labour



Recommendations

- Continuous In House Training
 - understanding and identify risk factors,
 - quality care and monitoring in pregnant women
 - the importance of recording 5 and 20min Apgar scores
- Neonatal Resuscitations (EENC)
- Communication
- A standard definition of Birth Asphyxia to be used (e.g. Checklist)

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References

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TRU-AVE!