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DISTRICT INEQUITIES IN HOUSEHOLD CHILD SURVIVAL PRACTICES IN THE UPPER WEST REGION OF GHANA

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DISTRICT INEQUITIES IN HOUSEHOLD CHILD SURVIVAL PRACTICES IN THE UPPER WEST REGION OF GHANA

By

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DECLARATION

The work described in this thesis was carried out at the Department of Community Health, KNUST-School of Medical Sciences. I declare that, except for references to other people's work, which I have duly acknowledged, this thesis is original to me. This work has not been submitted either completely or in part for the award of any other degree in this or any other university.

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DEDICATION

I dedicate this thesis to my parents (Mr William Otupiri and Mrs Comfort Otupiri), my wife (Joana) and children (Kwabena, Abena and Akosua) for all the encouragement you gave me to get this thesis completed. I love you very much.

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ABSTRACT

Worldwide, too many children under-five die needlessly but the greatest burden is in sub-Saharan Africa where in 2008, one-in-seven children died before the fifth birthday. Evidence shows that a set of 23 effective interventions could reduce child mortality by 66% if delivered at universal coverage (99%). Four of these interventions are capable of reducing the burden remarkably at universal coverage; three of these interventions do not require contact with the formal health sector. The children who are in greatest need of these life-saving practices do not get them. In Ghana, the worst place to live as a child under-five for the last two decades has been the Upper west Region; the 2008 GDHS reported a burden of 191 per 1000 live births for the region. Even though data on coverage of household practices for child survival growth and development are available at the regional level, the same cannot be said for data at the district and sub-district levels. Data at lower levels are poor, inconsistent and unreliable. National and regional data mask significant inequities within regions.

We sought to determine whether the then eight districts in the Upper West Region differ in terms of the uptake of the four core household practices evidenced to be capable of reducing the under-five mortality burden by up to 41% even in resource-constrained settings such as the Upper West Region; the region is one of the poorest in Ghana. Additionally, we were interested in differences across the districts with reference to specific cofactors. We collected data from 2400 households (300 per district) using the methodology described by UNICEF in the 2005 Multiple-indicator Cluster Survey manual. The outcome variables were the four core household practices – exclusive breastfeeding, appropriate complementary feeding, insecticide bed net use and oral rehydration salt for

diarrhoea management – which together at universal coverage could considerably reduce under-five deaths. The cofactors we studied included: child characteristics (age, sex); maternal characteristics (age, level of education, ability to read and write English); husband characteristics (age, level of education, ability to read and write English) and household wealth. In the Upper West Region, the overall prevalence of the four-core household practices was: exclusive breastfeeding (23%), appropriate complementary feeding (22%), insecticide bed net use (68%) and oral rehydration salt (47%). Even after multivariate adjustment, statistically significant district differentials were observed for all outcome variables (p≤0.05). With reference to the cofactors studied the following relationships were observed even after multivariate adjustment: wealthy mothers were significantly less likely to have initiated breastfeeding within an hour of delivery (AOR=0.85, p-value≤0.001, 95%CI: 0.77-0.93); a mother's ability to read and write English and her husband's age were significantly associated with appropriate complementary feeding (AOR=2.22, p-value ≤0.01, 95%CI: 1.35-3.56 and AOR=1.31, p-value≤0.01, 95%CI:1.09-1.57 respectively); children under-five from wealthy homes were less likely to have slept under an insecticide-treated bed net the night preceding the survey (AOR=0.78, p-value ≤0.001, 95%CI: 0.72-0.85) and a mother's age, her husband's age and ability to read and write English, and household wealth were significant predictors of a mother's ability to correctly prepare ORS. The study indicates important district inequities across the Upper West Region. Interventions should be evidence-based emphasizing district level differentials and recognizing the paradoxical effect of wealth. Further research could emphasize the cofactors studied, cultural practices, access to and utilization of health care facilities and family planning.

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ABBREVIATIONS/ACRONYMS

ACCESS	Access to Clinical and Community Maternal, Neonatal and Women's Health Services
AIDS	Acquired Immune-deficiency Syndrome
ANC	Antenatal Care
ARI	Acute Respiratory Infection
BASICS	Basic Support for Institutionalizing child Survival
BMC	Budget Management Center
BCG	Bacille Calmette-Guérin
CBA	Community-based Agent
CBDSV	Community-based Disease Surveillance Volunteer
CHAG	Christian Health Association of Ghana
CHERG	Child Health Epidemiology Reference Group
CHPS	Community-based Health Planning and Services
C-IMCI	Community-Integrated Management of Childhood Illness
DHA	District Health Administration
EBF	Exclusive Breastfeeding
EPI	Expanded Programme on Immunization
FANC	Focused Antenatal Care
FM	Frequency Modulation
FP	Family Planning

GAVI	Global Alliance for Vaccines and Immunization
GBoS	Gambia Bureau of statistics
GDHS	Ghana Demographic and Health Survey
GFP	Good Field Practice
GHS	Ghana Health Service
GmoH	Ghana Ministry of Health
GOBI	Growth Monitoring, Oral Rehydration, Breastfeeding and Immunizations
GSS	Ghana Statistical Service
GPRS	Ghana Poverty Reduction Strategy
HC	Health Centre
HFA	Health for All
Hib	*Haemophilus influenzae* type B
HIV	Human Immune-deficiency Virus
HMIS	Health Management Information System
HMM	Home Management of Malaria
IGME	Inter-agency Group for Child Mortality Estimation
IMCI	Integrated Management of Childhood Illness
IMNCI	Integrated Management of Newborn and Childhood Illness
IMR	Infant Mortality Rate
IPT_p	Intermittent Preventive $Treatment_{pregnancy}$

ITM	Insecticide-treated Material
ITN	Insecticide-treated Net
IYCF	Infant and Young Child Feeding
JHS	Junior High School
JL	Jirapa-Lambussie
KATH	Komfo Anokye Teaching Hospital
KNUST	Kwame Nkrumah University of Science and Technology
LA	Lawra
LDHS	Liberia Demographic and Health Survey
LIC	Low-income Country
LISGIS	Liberia Institute of Statistics and Geo-information Services
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MCT	Mother-to-Child Transmission
MI	Macro International
MICS	Multiple-indicator Cluster Survey
NA	Nadowli
NACP	National AIDS Control Program
NBS	National Bureau of Statistics
NHIS	National Health Insurance Scheme
OAU	Organization of African Unity
OPD	Out-patient Department

ORS	Oral Rehydration Salt
ORT	Oral rehydration therapy
PHC	Primary Health Care
PNC	Postnatal Care
PPS	Population Proportionate to Size
PSU	Primary Sampling Unit
RCC	Regional Coordinating Council
RHF	Recommended Home-made Fluid
SD	Standard Deviation
SE	Sissala East
SW	Sissala West
SMS	School of Medical Sciences
SP	Sulphadoxine-pyrimethamine
TBA	Traditional Birth Attendant
U5MR	Under-five Mortality Rate
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
URTI	Upper Respiratory Tract Infection
UWR	Upper West Region
WE	Wa East

WFFC	World fit for Children
WHO	World Health Organization
WM	Wa Municipal
WW	Wa West
5YPR	5-year Program of Work

Chapter 1

1.0 INTRODUCTION

1.1 GENERAL INTRODUCTION

Worldwide and particularly in developing countries, children continue to die needlessly. This chapter introduces the subject of child mortality, examines the literature on global child mortality and provides an account of the problem where the burden is greatest - sub-Saharan Africa. The problem is then described in the Ghanaian context and data specific to the study area - the Upper West Region - are provided. The problem statement and the study rationale give an account of the need for the study and the use to which the study findings can be put. The conceptual framework gives an account of the most discussed models for studying the pathways to child survival and borrows from four of such models to guide the study and to develop objectives and study hypotheses. A health profile of the study area is also provided. The chapter ends with a short account of the study scope.

1.2 PREAMBLE

In 2000, 189 United Nations member countries pledged to achieve eight (8) Millennium Development Goals (MDGs) by 2015, in order to achieve "a more prosperous and just world." All these goals save the lives of children and improve their well-being, particularly goals 4, 5 and 6.

MDG-4 aims to reduce child mortality, with a target of reducing under-five mortality rates (U5MR) by two-thirds over the period 1990–2015 (target 5). MDG-5 aims to improve maternal health, with a target of reducing the maternal mortality ratio (MMR) by three-quarters over the period 1990–2015 (target 6) and achieve universal access to reproductive health (target 6b). MDG-6 aims to combat HIV/AIDS, malaria and other major diseases,

with two targets to be achieved by 2015: (i) to have halted, and begun to reverse, the spread of HIV/AIDS (target 7); and (ii) to have halted, and begun to reverse, the incidence of malaria and other major diseases (target 8). Even though 2007 (mid-way) reports show that most countries have made gradual progress since 1990, many low-income countries, at current rates of progress, are unlikely to reach their goals by 2015 (Dodd & Cassels, 2006; Walley et al., 2008; Countdown Working Group, 2008).

The state of the world's children has been a big concern for many decades. Attempts at improving child health appear to have had mixed success - stalled in some settings, retrogression in others while some progress has been made in other settings. Recent initiatives have rekindled interest in child health globally, regionally and nationally but much more at the household level; the role that households play in child health has come to the forefront. The under-five and infant mortality rates are measures of child survival. Additionally, they mirror the social, economic and environmental conditions in which children live in any given community. Worldwide, millions of children under-five continue to die needlessly; most of them in sub-Saharan Africa and South Asia (Black et al., 2003; Jones et al., 2003; Lawn et al., 2005; WHO, 2008).

Beginning in the 1970s, the estimated annual number of deaths among children under-five years old decreased by more than a third. Since the 1990s, the global under-five mortality rate has declined from 90 per 1000 live births to 65 per 1000 in 2008 (You et al., 2010) and to 57 per 1000 in 2010 (UN Inter-agency Group for Child Mortality Estimation, 2011). The total number of under-5 deaths worldwide, declined from 12.5 million in 1990 to 8.8 million in 2008 (You et al., 2010) to 7.6m in 2010 (UN Inter-agency Group for Child

Mortality Estimation, 2011). Other estimates show that, worldwide, deaths in children under-five have actually dropped from 11.9 million in 1990 to 7.7 million in 2010; nearly 83% of the under-five deaths occur in South Asia (33.0%) and sub-Saharan Africa (49.6%), while less than 1% occur in high-income countries (Rajaratnam et al., 2010).

Compared with the 2008 UNICEF estimates, Rajaratnam and colleagues provide higher estimates for 73 countries and lower for 110 countries. In 110 countries for which UNICEF's estimates were higher, the most substantial differences occurred for the Democratic Republic of the Congo, Afghanistan, Nigeria, Kenya, Angola, China, Burma, Somalia, Pakistan, and Burkina Faso. In developing countries, mortality in children younger than 5 years declined by 35% from 1990 to 2010, a yearly rate of 2·1%. Progress has been slowest in sub-Saharan Africa and Oceania; there is clear evidence of accelerating rates of decline in under-5 mortality in all regions of sub-Saharan Africa. Rates of under-5 mortality in 25 countries in sub-Saharan Africa are now declining at more than 2% per year; in 34 countries in this region, the rate of decline has increased in the period 2000–10 compared with 1990–2000. This rate of decline is still lower than the Millennium Development Goal-4 (MDG-4) target of 4·4% per year and even though no country has a rate of under-5 mortality of more than 200 per 1000 in 2010 whereas 12 did in 1990 (Rajaratnam et al., 2010, UN Inter-agency Group for Child Mortality Estimation, 2011), the rate of progress is still not enough to achieve MDG-4 globally.

Despite global progress in the reduction of child deaths, only few of the 68 countries that bear the greatest burden of child mortality are making enough progress to reach MDG–4; reduce the under-five mortality rate by two-thirds by 2015. Data from several low-income

countries show that, declines in under-five mortality might actually have accelerated since 2000 (Kleinschmidt et al., 2009; Ndirangu et al., 2010; You et al., 2010; Rajaratnam et al., 2010) whereas in others, the rate of decline is zero or has reversed. The rate of decline in under-five mortality is still inadequate to meet MDG-4, particularly in sub-Saharan Africa and South Asia; of the 67 countries with the highest mortality rates (40 or more per 1000 live births), only ten are on track to meet MDG-4 (Countdown Coverage Group, 2008; You et al. 2010; Inter Agency Group for Child Mortality Estimation, 2009). A closer look at the favourable trend of "reductions in under-five mortality" worldwide, shows that the progress has been distributed unevenly (Countdown Coverage Group 2008; UNICEF, 2008a; UNICEF, 2008b; UNICEF, 2009a) and it is not all good news for children; in some parts of the world such as Tanzania and Bolivia, 40% and 70% respectively of sick children, never get to be seen at a health facility (Interagency Working Group on Community-IMCI, 2005).

In 2010, 70% of the world's under-5 deaths occurred in only 15 countries; half in only five - India, Nigeria, Democratic Republic of the Congo, Pakistan and China. Two countries, India and Nigeria together, account for nearly 30% of the total number of under-five deaths worldwide (UN Inter-agency Group for Child Mortality Estimation, 2011). It is obvious that even in 2010, still too many children under-5 died needlessly. The figures produced by various estimates are unacceptably too high and the regions with the heaviest burden are not in contention.

Most of child deaths are caused by preventable and or treatable conditions including malnutrition (Bryce et al., 2005; WHO, 2005, Black et al., 2008; Black et al., 2010; Bhutta et al., 2010); or conditions such as pneumonia, diarrhoea, malaria and measles that can be

managed by community-directed interventions for child survival (Lambrechts et al., 1999; Ahmad et al., 2000; Black et al., 2003, Gareth et al., 2003; WHO, 2008; Bhuta et al., 2008, Black et al, 2008; Black et al., 2010). These disease conditions have been known to either present singly or in co-morbidity patterns (Fenn et al., 2005) and underpin 80%-90% of sick children consultations and 40% of disability-adjusted life years lost (Lulseged, 2004). According to Black et al., (2010) infectious diseases were responsible for 5.970 million (68%) of the 8.795 million child deaths that occurred worldwide in 2008. Deaths occurring in the neonatal period (aged 0–27 days) made up for 3.575 million (41%), of all deaths in children under-5. Among neonates, the greatest single causes of death were preterm birth complications and birth asphyxia, but collectively, infectious causes were also important, especially sepsis and pneumonia.

Collectively, the most important causes of death in 2008 in children under-5 were infectious diseases, especially pneumonia, diarrhoea, and malaria. Undernutrition, including stunting, severe wasting, deficiencies of vitamin A and zinc, and suboptimum breastfeeding, is not presented as a direct cause of death but has been found to be an underlying cause in a third of deaths in children younger than 5 years (Black et al., 2008; Black et al., 2010; Bhutta et al., 2010).

These conditions will continue to be major contributors to under-five mortality in 2020 if efforts are not taken to control the conditions (Murray et al., 2007). The children in greatest need do not get care when they need it (Black et al., 2003; Bryce et al., 2003; Bryce et al., 2005; WHO, 2008a; Boschi-Pinto, Bahl & Martines, 2009; Countdown 2008 Equity Analysis Group, 2008). Evidence-based interventions known to reduce under-5 morbidity

and mortality need a delivery system through which those who need them can be reached. The problem is that, health systems are weakest where child mortality is highest (Bryce et al., 2003; Bhutta et al., 2010) and are unable to achieve the coverage required to address the burden. Additionally, the density of health workers (doctors, midwives, nurses), is inversely associated with maternal, neonatal, infant and under-five mortality, and it is more than ten times higher in developed countries than in sub-Saharan Africa (Anand & Barnighausen, 2004).

In Africa, even though deaths in children under-five have declined by 22% since 1990, the rate of improvement does not meet the requirements for achieving MDG 4. Improvements in child survival have been very unconvincing. Since the 1990s, declines in child mortality have either slowed or stalled or worse still, have reversed in many countries, making it unlikely that the MDG4 target can be achieved (You et al., 2009). In the African region, 4.199 million children under-five died in 2008. South-east Asia was the only other region that came close; 2.390 million children under-five died in this region. These two regions had differing patterns of causes of death; compared with South-east Asia, a lower proportion of neonatal deaths were recorded in the African region (29%, 1.224 million versus 54%, 1.295 million respectively). Malaria and Acquired Immune-deficiency Syndrome (AIDS) were the greatest killers of children under-5 in the African region; malaria was responsible for 0.677 million (16%) of deaths while AIDS caused the deaths of 0.181 million (4%) children under-5. Almost all global deaths, in children under-5 due to malaria, occurred in Africa (92%). Four-in-five of global AIDS-related deaths in children under-5 also occurred in the African region (Black et al., 2010). Every day, an estimated 12

000 children die in sub-Saharan Africa from easily preventable or treatable illnesses and conditions, such as pneumonia, diarrhoea, measles, malaria and malnutrition (WHO, 2005).

Africa needs to decrease child mortality by 8% per anum to realize the MDG-4. At the current annual reduction rate of 0.5-0.7%, the earliest Africa can expect to reach this goal is 2115; a good one hundred years beyond the target year (Black et al., 2003; Fotso et al., 2007). Sub-Saharan Africa has to achieve an average decline of 7% to be back on track for MDG-4 (UN, 2009). However, estimates by Rajaratnam and others suggest that the picture is not that bad; rates of under-five mortality in 25 sub-Saharan African countries are now declining at a higher rate than 2% per year. In 34 countries in this region with the worst rates, the decline rate has increased over the period 2000-2010 when compared with 1990-2000 (Rajaratnam et al., 2010).

In sub-Saharan Africa, one-in-seven children (144 per 1000 live births) died before the fifth birthday in 2008; the highest levels were in West and Central Africa where one-out-of-six children died before age five years (You et al., 2009). In 2010, among the 26 countries with under-5 mortality rates higher than 100 per 1000 live births, 24 are found in sub-Saharan Africa (UN Inter-agency Group for Child Mortality Estimation, 2011). A major reason for the poor progress in reducing under-five mortality at the global level despite the great achievements in reductions of more than 50 % in many regions is the large and growing share of child mortality in sub-Saharan Africa and Southern Asia. Sub-Saharan Africa with only 11% of global population, accounts for over 42-49% of the world's under-five mortality burden (Black et al., 2003; Hagen, 2007), and even though it bears 25% of the global burden of disease, it holds only 3% of the world's health care workers (WHO,

2006a). This raises the importance of the household as the producer of health concept with mothers/caregivers at the centre of it all.

West African countries record under-five mortality two-three times that of neighbouring countries in northern Africa and countries in the southern Africa region have considerably lower under-5 mortality rates than the countries in other sub-Saharan regions. Several West African countries have the highest rates of under-5 mortality worldwide including Nigeria, Guinea-Bissau, Niger, Mali, Chad and Equatorial Guinea (WHO, 2008a; You 2010, Rajaratnam et al., 2010). However there are still considerable differentials within the West African region; Niger's infant mortality rate is more than double that of Ghana. Sub-nationally, rates differ in some instances by as much as four-fold (Balk et al., 2003).

Utilization of health facilities remains low in many parts of the world and children are treated at home placing a lot of importance on the household practices related to child survival. Many sick children do not reach health facilities and do not get to see a health provider before they die; children from poorer families are more likely not to receive health care (Countdown 2008 Equity Analysis Group, 2008). Almost half of the 80% of children who die at home in rural Tanzania, did not visit a health facility or see a health worker before they died even though majority live within five kilometers of a health facility (Armstrong-Schellenberg et al., 2004). In Malawi, close to 54% of under-five mortality occurs at home and in 80% of cases, a sick child presenting with danger signs of vomiting, altered consciousness and convulsion is not rushed immediately to a health facility (Wansi et al, 2000). Schumacher and others (2002), report that, in Guinea, 61% of children who were ill and later died, had not been seen by a formal health worker.

The extent of variation found between major causes of deaths in commonly used regional groupings is the strongest evidence for the need to disaggregate data at national, regional and district/county levels to allow public health efforts to be focused appropriately (Black et al., 2003; Bhutta et al., 2010).

1.2.1 Global efforts at improving child health

Agencies, organizations, groups and individuals such as UNICEF, WHO, UNFPA, the Child Health Epidemiology Reference Group (CHERG), the CORE Group, Save the Children, the Countdown Working Group, the Alma-Ata Working Group, the Global Alliance for Vaccines and Immunization (GAVI), the Inter-agency Group for Child Mortality Estimation (IGME), Access to Clinical and Community Maternal, Neonatal and Women's Health Services (ACCESS) and Basic Support for Institutionalizing Child Survival (BASICS), and nations, have collectively and individually contributed and continue to contribute to efforts to reduce the global burden of deaths in children. For their part, African governments pledged to increase spending on health to at least 15% of their annual budgets (OAU, 2001). The gaps might even have been greater in the absence of these strategies dedicated to improving child health but it is clear that present initiatives have come nowhere close to eliminating child deaths.

The Countdown was established in 2005 and aims to stimulate country level action by tracking coverage for interventions needed to attain Millennium Development Goals 4 and 5 – and, in addition, parts of Millennium Development Goals 1, 6 and 7. In 2005, the 68 countries that together had 97% of maternal and child deaths were designated as priority countries for Countdown Working Group. Included among these countries are 34 of the 36

countries with highest prevalence of child under-nutrition worldwide. The activities of the Countdown Working Group are guided by four principles: a focus on coverage, a focus on effective interventions, maintenance of a country orientation and, building on existing goals and monitoring efforts (Countdown Working Group, 2008).

Of the 68 countries which account for 97% of global maternal and child deaths, only 16 are on track to meet MDG4; maternal mortality is still high or very high in most (56/68) of these countries, with negligible progress towards achievement of MDG-5 (Countdown Working Group, 2008; Boschi-Pinto et al., 2009; Rajaratnam et al., 2010). Coverage of key MDG-related health interventions, such as assisted deliveries, is still inadequate, with large variations both between and within countries; in most low-income countries the pace of increase needs to be more than doubled to reach levels of coverage required to meet health needs (Victora et al., 2003; Countdown Working Group; 2008).

These patterns of less than expected declines were observed despite the growing contribution of development assistance for health (Birch, 2009), which increased from US$2.5 billion to almost US$14 billion between 2000 and 2005 (World Bank, 2008), with a proliferation of global health actors resulting in 40 bilateral donors, 26 United Nations (UN) agencies, 20 global and regional funds and more than 90 global health initiatives (DFID, 2007). However, donor assistance tended to be highly volatile, highly unpredictable and poorly coordinated; these concerns have given rise to concerted efforts towards improvement of aid effectiveness in order to achieve the expected results in recipient countries. Attaining the ambitious targets pronounced in the MDGs will necessitate substantial acceleration of primary health care (Walley et al., 2008) and further

strengthening of health systems (Travis et al., 2004), with radical changes in policy as well as strong inter-sectoral coordination at international level.

While aiming for such macro-level achievements, it is imperative to analyse the on-the ground realities of health systems at the country and sub-country levels; the household level. Several individual and household level factors have been identified as important determinants of infant and child survival; maternal education level (McMurray, 1997; Trussel & Hammerslough, 1983; Agha, 2000), and pace of childbearing (Rao Pandey & Shajy, 1997; Gupta & Baghel, 1999; Agha, 2000; Whitworth & Stephenson, 2002) are two examples.

Boschi-Pinto, Bahl and Martines (2009) undertook a systematic analysis of the coverage of six key child-health interventions using the following indicators in 29 African and Asian countries that had had two recent demographic and health surveys: skilled delivery, initiation of breastfeeding within one hour of delivery, exclusive breastfeeding for six months, complete immunization for children aged 12-23 months, appropriate health care-seeking for children with Acute Respiratory Infection (ARI) and provision of Oral Rehydration Therapy (ORT) for children with diarrhoea. The Demographic and Health Surveys (DHS) used were carried out in 2001 or later and the immediately preceding survey conducted after 1990. The authors examined the relationship between the changes in the coverage of interventions and the changes in rates of mortality among children under-five. They found that, a limited increase in the coverage of key child-health interventions had occurred in the past 5-10 years, in these 29 countries in sub-Saharan Africa and Asia. More than half of the countries did not record any significant improvements or significant

reductions in the coverage of oral rehydration therapy (ORT) for diarrhoea (17/29), or care-seeking for acute respiratory infection (ARI) (16/29). Results of multivariate analysis revealed that, increases in the coverage of early initiation of breastfeeding, ORT for diarrhoea, and care-seeking for ARI were significantly associated with reductions in under-five mortality (Boschi-Pinto, Bahl & Martines, 2009).

There is very strong evidence that a set of 23 effective interventions; 15 preventive (9 child, 6 newborn) and 8 case management (6 child, 2 newborn), could reduce child mortality by 66% if they reached universal coverage (Jones et al., 2003; The Bellagio Study Group 2003; Boschi-Pinto, Bahl & Martines, 2009; Bhutta et al., 2010). Universal coverage is defined as 99% for all 23 interventions except exclusive breastfeeding interventions with the definition being 90%. Increasing the coverage of such interventions is essential for the achievement of MDG-4.

Table 1.1: Under-5 deaths that could be prevented in the 42 countries with 90% of worldwide child deaths in 2000 through achievement of universal coverage with individual interventions

	Estimated under-5 deaths prevented	
	No. of deaths x 10^3	Proportion of all deaths (%)
Preventive interventions		
1. Breastfeeding	1301	13
2. Insecticide treated materials (ITMs)	691	7
3. Complementary feeding	587	6
4. Zinc	459(351)*	5(4)*
5. Clean delivery	411	4
6. Hib vaccine	403	3
7. Water, sanitation and hygiene	326	3
8. Antenatal steroids	264	3
9. Newborn temperature management	227(0)*	2(0)*
10. Vitamin A	225(176)*	2(2)*
11. Tetanus toxoid	161	2
12. Niverapine and replacement feeding	150	2
13. Antibiotics for premature rupture of membranes	133(0)*	1
14. Measles vaccination	103	1
15. Intermittent preventive treatment in pregnancy (IPT_p)	22	<1
Treatment interventions:		
1. Oral rehydration therapy (ORT)	1477	15
2. Antibiotics for sepsis	583	6
3. Antibiotics for pneumonia	577	6
4. Antimalarials	467	5
5. Zinc	394	4
6. Newborn resuscitation	359(0)*	4(0)*
7. Antibiotics for dysentery	310	3
8. Vitamin A	8	<1

* Numbers represent effect if both interventions with sufficient and limited evidence are included. Value number in brackets shows effect if only intervention with sufficient evidence is accepted. Interventions for which only one value is cited are all classified as interventions with sufficient evidence.

Source: Jones et al., 2003

Jones and others (2003), as part of the well-acknowledged Bellagio *Lancet* series on child survival, present two kinds of interventions; interventions with sufficient evidence-base of effectiveness and interventions for which the evidence-base for effectiveness exists but is

limited. The authors provide numbers and proportions of child deaths that could be prevented through the application of each intervention alone under the two sets of conditions: (1) applying only those interventions for which there is sufficient evidence of effect (level 1); and (2) also applying interventions for which there is limited evidence of effect (levels 1 and 2). Two interventions, namely oral rehydration therapy and breastfeeding, were each estimated to prevent more than 10% of deaths. Six (6) other interventions could each prevent at least 5% of child deaths. These include: use of insecticide-treated materials (ITMs), use of antibiotics for neonatal sepsis, improvement of complementary feeding, use of antibiotics to treat pneumonia, preventive zinc supplementation and antimalarial treatment. Breastfeeding promotion in countries with a high burden of HIV among women of reproductive age may increase mother-to-child transmission (MCT) of the virus. This shortcoming was taken into account in the modeling exercise; otherwise, breastfeeding would have probably prevented 15% instead of 13% of child deaths. In summary, a core set of 6 interventions with sufficient evidence of effect (level 1) have the capacity to reduce child deaths by more than half, even in settings with very high mortality. (Table 1.1)

Of the 9·7 million child deaths that occurred in the 42 countries in 2000, about 5·5 million deaths (57%) could have been prevented by achieving universal coverage with interventions for which there is sufficient evidence (level 1), and two-thirds if both the interventions with sufficient and limited evidence-bases (levels 1 and 2) were universally implemented (Jones et al., 2003). The previously known efficacy and effectiveness of preventive and therapeutic interventions such as measles vaccination and the prevention of dehydration among children with diarrhoea through oral rehydration therapy has been

confirmed by current publications on child mortality in low- and middle-income countries. Current knowledge has documented the mortality reduction benefits of additional existing interventions such as micronutrients and other nutritional interventions, and to identify new and highly effective interventions, such as insecticide-treated materials (ITMs) for the prevention of malaria and *Haemophilus influenzae* type B vaccine (Hib vaccine). More than ever before, we have effective interventions and increasing experience in integrated approaches and ways to adapt them to local conditions and settings (Tulloch, 1999).

The additional cost of providing these evidence-based cost-effective child health interventions is US$ 5.1 billion annually (The Bellagio Study Group, 2003). Even in relation to the cost of public-health initiatives, child survival is good value for money (World Bank, 1993; Bhutta et al., 2010). Application of what is currently known and available, can reduce child mortality by two-thirds and achieve the Millennium Development Goal-4. The World Health Organization Commission on Macroeconomics and Health reports that, a substantial proportion of the required funds could be sourced from within the countries themselves; for a set of essential interventions costing $34 per person per year and for all age-groups, even the least-developed countries (LDCs) could raise $15 yearly by 2007, leaving $19 to come from international assistance (Sachs, 2001).

Research evidence shows that improving the way children are cared for, particularly at the household and community level, has a far reaching effect on their health and development. Improving household practices has a cumulative impact, greater than the sum of individual practices. The care that children receive at home, in their families and in their communities is just as important as the treatment available in health facilities.

Over 60% of children who die from disease in developing countries are also suffering from malnutrition. In most cases, the problem is not lack of food, but feeding the wrong food, or too infrequently, or in the wrong way. Improved breastfeeding alone cuts by a quarter the number of babies under six months old who die from diarrhoea. Improved complementary feeding for young children can reduce deaths from diarrhoea and pneumonia by more than 10%. It can also reduce malnutrition by up to 20%, and increase resistance to measles and other infectious diseases. Improving vitamin A intake, through the diet or by giving supplements, cuts child deaths by over 20% in children aged from 6 months to five years. If all children were immunized against measles before the age of one year, most of the 600,000 measles deaths per year would be prevented. The number of children who die from malaria has increased to around 900,000. If these children slept under insecticide treated bednets, deaths could be cut by up to 23%. The correct home treatment of malaria could cut deaths by 40%. Nearly all the 1.3 million children, who die from diarrhoea, could be saved if parents knew how to give them the care they need. This means continuing to offer food and extra fluids, and to take children for medical attention at the right time. Handwashing alone can reduce the incidence of diarrhoea by 35% (Interagency Working Group on Community-IMCI, 2005).

The 'coverage gap' reported by the 2008 Countdown Working Group provides information on equity in coverage within countries, as reflected in the country profiles. These profiles show huge intra-country differentials between the poorest quintile of the population and the richest quintile. When measured by absolute differences in coverage, the largest inequity for interventions and approaches in maternal, newborn and child health is recorded in Nigeria (2003). Here, the difference between universal and current coverage for eight

interventions known to lead to improvements in maternal, neonatal and child health, is 45 percentage points greater for the poorest than for the least poor (Countdown Working Group, 2008; Countdown 2008 Equity Analysis Group, 2008).

The concept of equity in health denotes each person getting health care according to the person's needs. Gaps in child mortality between rich and poor countries are unacceptably wide and in some areas are becoming wider, as are the gaps between wealthy and poor children within most countries. Health coverage disparities that appear to be unfair and avoidable represent inequities (Countdown Equity Analysis Group, 2008). According to Barros and others (2012), in 54 countries worldwide, the most inequitable health indicator is skilled delivery while the most equitable is early initiation of breastfeeding; unlike in high-income countries, in many low-income countries breastfeeding is more prevalent among the poor than the rich (Bhutta et al., 2010; Li & Grummer-Strawn, 2002). Countries that report similar levels of overall coverage for essential interventions may differ in terms of equity. Interventions delivered through static services (facility-based) tend to be the most inequitably distributed while those that are delivered at the community level (through outreach programmes and campaigns) tend to be much more equitable (Barros et al., 2012). Other factors that may influence equity include but are not limited to location and organization of health facilities, cost and cultural perceptions on interventions such as contraceptives and breastfeeding. The survival prospects of poor children are not as good as those of children from rich households. Worse still, these gaps show signs of widening, both between and within countries (Wagstaff, 2000; Wagstaff et al., 2004; Gwatkin et al., 2007; Countdown 2008 Equity Analysis Group, 2008; Bhutta et al., 2010). These huge gaps exist despite the availability of an impressive array of effective interventions (Jones et al.,

2003; Boschi-Pinto et al, 2009), and despite initiatives such as GOBI (growth monitoring, oral rehydration, breastfeeding and immunizations) and Health for All 2000 (HFA) and MDGs all of which combine focus on interventions aimed at diseases that disproportionately affect poor children with a strategy to make them available free of charge through primary care facilities; not much has changed.

Socioeconomic status differences in child mortality are not simply inequalities they are also inequities - inequalities that are unjust and unfair. Although commitment to addressing inequities is welcome, little attention has been paid to how international agencies and national and sub-national governments can combat inequities in child survival. One thing is clear: more of the same is simply not enough.

The breakdown of national household survey data by socioeconomic status (Morris et al., 2000; Filmer & Pritchett, 2001), has contributed greatly to the level of understanding of why poor children are less likely to survive than their richer peers. Results of systematic analyses of demographic and health surveys consistently reveal these inequities in child health across many countries (Gwatkin et al., 2000; Gwatkin et al, 2007).

Compared with children born to better-off families, poor children are more exposed to risks for disease through inadequate water and sanitation, indoor air pollution, overcrowding, poor housing conditions, and high exposure to disease vectors (WHO/World Bank, 2002). These children are also more likely to have lower resistance to infectious diseases because they are malnourished (an underlying cause of about 50% of deaths children younger than 5 years) and or undernourished (Black et al., 20003). Additionally, they are known to have

diets deficient in one or more essential micronutrients such as vitamin A, iron and zinc, to have a low birthweight as a result of poor maternal nutrition, infections during pregnancy, and short birth intervals, and to have recurrent disease episodes (WHO/World Bank, 2002; Wagstaff et al., 2004; Bhutta et al., 2008).

Poverty thus increases exposure and reduces resistance to disease, a synergy that contributes to the wide inequities in child survival worldwide. In view of these differences in exposure and resistance, poor children are more likely to become sick. In an ideal world, coverage for preventive interventions such as vaccinations, vitamin A supplementation, and insecticide-treated mosquito nets would be highest in the poorest households to offset these higher risks. The poorest children are the least likely to be vaccinated, to sleep under a treated bed net or to receive vitamin A supplementation (Hanson & Jones, 2000). Inequities in exposure and resistance are therefore compounded by inequities in coverage for preventive interventions, making poor children even more likely to become sick and in need of curative care, compared with children who are less poor. Once poor children become sick, they are not as likely as their richer peers to receive appropriate care at home or at a health facility (Tipping & Segall, 1996; Gwatkin et al, 2000). Even if poor children do reach a health facility, they are less likely to receive the appropriate care because facilities serving poor communities are not as likely to have well-trained staff or to be well stocked with medicines as facilities serving wealthier communities.

A multi-country evaluation of the integrated management of childhood illness, used an asset index (Filmer & Pritchett, 2001), to provide many examples of how even within poor rural areas, the use of appropriate health care varies with wealth. In a poor rural area of Tanzania,

the poorest children were 27% less likely to seek care from an appropriate provider than the least poor, and children from the poorest families, were not as likely as their better-off peers to have received antimalarials for fever or antibiotics for pneumonia (Armstrong Schellenberg et al., 2003). Socioeconomic inequities in child survival thus exist at every step along the path from exposure and resistance to infectious disease, through healthcare seeking, to the probability that the child will receive prompt treatment with effective therapeutic agents. The odds are stacked against the poorest children at every one of these steps. As a result, they are more likely than their better-off peers to die in childhood.

These odds place a lot of responsibility on the management of childhood illnesses at home making the household the producer of health, a key player in the pathways for child survival, growth and development. Attempts at lower sub-country levels to provide data on household practices that impact child survival, are seen as essential, as they provide evidence on inequity and inequality in household determinants of child survival within countries and even among poor populations. Such evidence is blinded by large surveys that provide data at national levels.

1.2.2 Child survival in Ghana

The United Nations Children's Fund (UNICEF), ranked Ghana as the 47th worst country to live in as a child under-five in 2007 (UNICEF, 2008a). According to data from the WHO (2006b), one-third (33%) of deaths in children under-five in Ghana are due to malaria. Pneumonia is the second biggest killer of children under-five in Ghana, it accounts for 15% of all such deaths while diarrhoea is responsible for 12%. Neonatal causes of death

contribute 29% of deaths in children under-five (WHO, 2006b; Lawn et al, 2006). The 2008 Ghana Demographic and Health Survey (GDHS), states Ghana's under-five mortality rate as 80 per 1,000 live births and the infant mortality rate is 50 per 1,000 live births (GSS/GHS/ICF Macro, 2009).

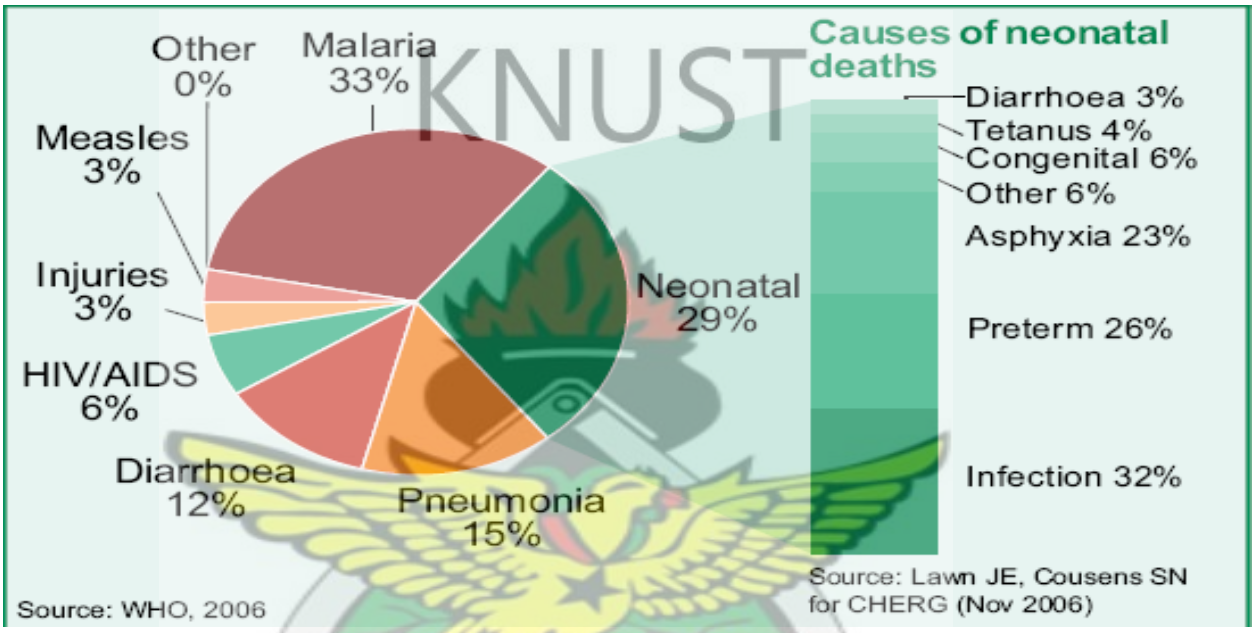


Figure 1.1: Causes of under-five mortality in Ghana, 2005

In line with achieving the MDG-4, Ghana aims to reduce child mortality to 40 per 1000 live births by 2015, which is also consistent with the National Health Policy III, the Health Sector Programme of Work 2007-2011 (5YPOWIII 2007-2011) and the Ghana Poverty Reduction Strategy (GPRS). The policy thrust for the 2007-2011 period is to strengthen systems for effective and efficient service delivery to household and communities, targeting maternal and child health outcomes (GMoH, 2007). The Ghana Ministry of Health has identified 18 household practices as key to the survival of children under-five in Ghana

(GMoH, 2009). These practices are grouped into four areas: pregnancy, delivery and newborn care practices, infant feeding practices, illness prevention practices and home management of common childhood illnesses practices. (Appendix 2)

The Ghana Ministry of Health (GMoH) reported that in 2009, there were only 2,442 physicians working in Ghana; an equivalent of over 30% of Ghana's medical capacity are reported to be practicing in the United States, Canada and the United Kingdom (GMoH, 2009; Mullan, 2007). The national doctor-to-population ratio for 2007 was estimated at 1:13683 (GHS, 2008). This poor ratio further deepens the unlikelihood that children who are in the greatest need for care will get access to the quality of care they require.

Child mortality

A trend analysis of results from the most recent five demographic and health surveys for Ghana shows a decline in childhood mortality over the past 20 years. This decline stagnated briefly during the period 1999-2003, but then the under-five mortality rate (U5MR), declined even further from 2003 to 2008; 111 per 1000 to 80 per 1000 live births respectively. The infant mortality rate (IMR), has declined from 64 deaths per 1,000 in 1998 to 50 deaths per 1,000 in 2008. Mortality levels in rural areas are higher than those in urban areas; rural areas have infant and under-five mortality rates of 56 deaths per 1,000 live births and 90 per 1,000 live births respectively, compared with 49 per 1,000 live births and 75 per 1,00 live births respectively in urban areas. Regional differentials are obvious; the infant mortality rate ranges from a low of 36 deaths per 1,000 live births in Greater Accra Region to 97 deaths per 1,000 live births in the Upper West Region. The disparity in the under-five mortality rate is similar; 50 deaths per 1,000 live births in the Greater Accra

and Volta regions, to a high of 137 and 142 deaths per 1,000 live births in the Northern and Upper West regions respectively (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010a). In order to achieve the MDG4, Ghana has to reduce under-five mortality from the current 80 per 1,000 live births to 40 per 1,000 live birth by 2015 (ICF Macro, 2010a).

A woman's level of education is inversely related to her child's risk of dying; compared with children of mothers with middle/Junior High School (JHS) level of education, children under-five whose mothers have no formal education are at higher risk of dying before their fifth birthday (68 per 1,000 live births versus 102 per 1,000 live births respectively). A similar disparity exists for infants of women with no formal education and infants of women with middle/Junior High School level of education; 61 versus 46 deaths per 1,000 live births. The relationship between childhood mortality and wealth is unclear; even though both IMR and U5MR are highest among children from the poorest households (59 and 103 deaths per 1,000 live births respectively), they are equally high among children living in households in the middle wealth quintile; 70 deaths and 102 deaths per 1,000 live births respectively (GMoH, 2007; ICF Macro, 2010a).

Based on the Ghana Demographic and Health Survey (GDHS) data, ICF Macro has undertaken a trend analysis for the period 1960-2008 of indicators for interventions known to reduce child mortality even in resource-poor settings. The findings indicate that the majority of pregnant women receive at least some antenatal care, mostly from a health professional other than a doctor. After a period of little change between 1999-1993, a recent upsurge in antenatal care uptake has been observed in Ghana. These gains were recorded both in urban and in rural communities. Between 1988 and 2003, women in rural

communities were less likely to receive antenatal care than colleagues in urban settings. For example, in 2003, the proportion of births in rural communities for which the mother did not receive any antenatal care was 10%, compared with 1% for urban births. However, in 2008, only 1-in-20 women in rural communities did not receive any antenatal care while pregnant, compared with 1-in-100 for urban communities. Increases in maternal education were associated with antenatal care uptake; in 2008, 50% of women with a minimum of secondary school education sought antenatal care from a nurse/midwife, while 48% received care from a doctor. For 2008, 98% of women aged 15-49 years in the Upper West Region accessed antenatal care (ANC), at least once from a skilled provider during their most recent pregnancy (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010b).

Malaria prevention in pregnant women

In 2003, the Ghana Ministry of Health and the Ghana National Malaria Control Programme, adopted the Intermittent Preventive Treatment in pregnancy (IPT_p) intervention with sulphadoxine-pyrimethamine (SP), as one of the strategies to prevent malaria in pregnancy, with the view to reducing the adverse effects of pregnancy-associated malaria on mother, foetus and the newborn. According to data from the GDHS 2008, more than half (56%), of women with a birth in the two years preceding the survey, received at least one dose of IPT_p with SP, while more than 4-in-10 (44%), reported receiving the recommended two or more doses of IPT_p. In 2003, only 12% of pregnant women with a live birth in the five years preceding the survey reportedly received IPT_p with chloroquine during their most recent pregnancy, and only 1% received the recommended two or more doses of SP as IPT_p. The IPT_p with SP coverage (single dose) for the Upper West Region

was 65% while 53% took at least 2 doses (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010b).

Tetanus toxoid

Between the 1988 GDHS and the 2008 GDHS, the proportion of births for which the mother received at least one tetanus toxoid injection increased steadily from 71% to 88%. As expected, compared with women in rural areas, women in urban areas were more likely to receive a tetanus toxoid injection. For example in 2008, 95% of mothers in urban communities received at least one dose of tetanus toxoid injection as against 85% of women in rural communities. The level of education of the mother was positively related to tetanus toxoid coverage; 83% of births to women with secondary school or higher level of education were protected against neonatal tetanus, compared with 64% of births to women with no formal education. Wealth differentials were also recorded; women living in wealthier households were more likely to have received two or more tetanus toxoid injections during their last pregnancy and their births were more likely to have been protected against tetanus than women in the lowest wealth quintiles. In the Upper West Region, 45% of women had two or more tetanus toxoid injections during their last pregnancy in 2008 (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010b).

Skilled delivery

The proportion of skilled birth attendance increased from 41% in 1988 to 59% in 2008. Births in urban communities were more likely to have been assisted by a health professional; in 2008, 84% - 86% of deliveries in urban communities were assisted by a skilled attendant compared with 43% - 45% in rural communities. The higher the level of formal education of the woman, the more likely she was to have had a skilled delivery; 38% of women without any formal education were assisted by a skilled attendant compared with

91% of births to women with a minimum of secondary school education. Women who delivered in urban communities were more likely to have been assisted by health professionals than those who delivered in rural communities. In 2008, 86% of births in urban areas were attended at birth by a health professional compared with 45% in rural areas. However, in both urban and rural areas, births attended by other health professionals increased much more than births attended by doctors. The differences by wealth quintiles were obvious; when women from the richest households were compared with those from the poorest households, the richer women were three times more likely to have had a skilled delivery at birth (95% versus 24%, respectively). In the Upper West Region, 46% of births were assisted by a skilled attendant (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010b).

***Vaccination** coverage*

The level of vaccination coverage (all vaccines) in Ghana increased from 47% in 1988 to 79% in 2008. Coverage increases have been higher in the rural communities than in the urban settings such that there were virtually no urban-rural differences in coverage figures for 2008; 78% (urban) versus 79% (rural). Even though an association between immunization rates for young children and the mother's level of formal education persists, gains in coverage levels among children of mothers with no formal education or with primary school education have resulted in narrowing the gap in immunization coverage between children of less educated mothers and those of mothers with higher education. Between 2003 and 2008, immunization coverage increased more for children of mothers without any formal education and those with at most a basic school level of education. Paradoxically, the coverage reduced for children with mothers who have at least a secondary school level of education; they were the least likely to be vaccinated in 2008 (73%). Coverage fell to below 60% for children in the Northern Region and rose to 94% in

the Brong Ahafo Region. The proportion of children fully immunized in 2008 increased to some extent with wealth quintile; 75% in the lowest to 86% in the forth quintile and 84% in the highest quintile. In the Upper West Region, 89% of children aged 12-23 months received all the basic vaccinations in 2008 (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010b). A majority (90%) of children aged 12-23 months was vaccinated against measles, one of the indicator vaccines for assessing MDG-4 achievement; more girls than boys were vaccinated (93 versus 86%) and more children resident in urban areas than in rural areas were vaccinated (93 versus 88%) (ICF Macro, 2010a).

Malaria prevention in children

In 2008, more than four in ten (45%) households in Ghana owned a mosquito net (treated or untreated), while one-third (33%) owned at least one insecticide-treated net (ITN). Household ownership of mosquito nets has increased substantially between 2003 and 2008; from 18 to 45%. Household ownership of more than one net increased from 9% in 2003 to 19% in 2008. Additionally, compared with 3% in 2003, 33% of households owned an ITN in 2008. Households in the Upper East Region reported the highest level of ownership of ITNs (47%) while those in Greater Accra Region reported the lowest (20%). When households were compared by wealth quintiles, households in the first and second wealth quintiles were more likely to own at least one mosquito net than households in the other wealth quintiles. The proportion of children under-five who reportedly slept under a mosquito net the night before a GDHS increased from 4% in 2003 to 28% in 2008. Forty-six percent (46%) of households in the Upper West Region owned at least one ITN in 2008 (GSS/GHS/ICF Macro, 2009; ICF Macro, 2010b).

Sanitation

Nationally, the proportion of women aged 15-49 years living in households with a flush toilet more than doubled between 1988 and 2008; it increased from 7% in 1988 to 16% in 2008. The proportion of women aged 15-49 years who live in households without toilet facilities declined somewhat, from 24% to 20%, during the same time period. The rural-urban divide is considerable; in urban areas, the proportion of women living in households with a flush toilet increased from 17% in 1988 to 30% in 2008, while in rural areas it increased only from 1% to 4% during the same period. Overall, only 11% of households do not share their improved toilet facilities with other households. There are marked differences by urban-rural residence; in 2008, 16% of urban households and 7% of rural households used improved toilet facilities that were not shared with other households. However, 18% of households did not have toilet facilities, a situation that was more common in rural areas (30%) than in urban areas (6%) (GSS/GHS/ICF Macro, 2009; ICF Macro 2010b).

Water safety

Slightly more than 3-in-4 (77%) of households obtain drinking water from an improved source. Less than 1-in-5 (14%) of households have access to piped water in their dwelling, yard, or plot, while 29% access drinking water from a public tap. A third of households (33%), get their drinking water from a tube well or borehole, or a protected dug well while 13% of households use non-improved sources of drinking water and about 9% use either bottled or sachet water. Interestingly, in 2008, there was little difference between urban and rural households in terms of access to improved sources of drinking water (79% versus 76%, respectively). The major source of drinking water for rural households was tube wells

or boreholes (48%). One-fifth of rural households use a public tap or standpipe as their main source of drinking water (GSS/GHS/ICF Macro, 2009).

The care that children receive at the household level has incredible influence on their survival, growth and development. Such care implies the behaviours and practices of caregivers (mothers, older siblings, fathers and other child care providers) that shape food provision, health care seeking behaviour and provision, stimulation and emotional support for a healthy survival, growth and development (Engle & Lhotska, 1999; Engle, Pelto & Bentley, 2000).

1.3 PROBLEM STATEMENT

The differences in child mortality rates between countries are enormous and well documented. The risk of dying for a child born today in Japan is 6 per 1000, while in Angola, Sierra Leone and Afghanistan; it is over 40 times as great. In-country differentials, even though prevalent, are less well documented. Disparities in under-five mortality within countries have been attributed mainly to differences in available resources, access to health care, and access to education for women (Wagstaff, 2000), factors also expressed in many frameworks as partially responsible for explaining the pathways to child survival (Mosley and Chen 1984; Waldman et al., 1996; UNICEF, 1990; The World Bank, 2000).

Many assessments of country and in-country levels of the coverage of child survival interventions and the levels of infant mortality and under-five mortality burdens, regularly acknowledge the dearth and inadequacies of data at the sub-country level and the corresponding difficulty in providing credible estimates of coverage and mortality levels

except through modeling with its associated risk of inaccuracy (WHO, 2005; Black et al., 2010; Rajaratnam et al., 2010). These assessments stress that the need for evidence accruing from lower level data is essential in the bid to develop policies and interventions to mitigate the gapping differentials which exist even among seemingly similar communities. As much as developing countries are not the same and should be treated differently, so it appears that important lower intra-country level differentials exist and which could be important for child survival interventions (Rosling, 2010) and so must be documented.

In Ghana, data on some key household practices for child survival, such as infant feeding, prevention and management of common childhood illnesses, and health care seeking behaviour, are available on regional basis. However, difficulties arise when attempts are made to develop district-specific interventions to improve household practices. These practices have been demonstrated to impact on child health; the available data to assess district-level interventions are weak, poorly documented and unreliable. Large scale national surveys produce estimates of household practices but there is still insufficient data at the district and lower levels.

Currently, the Upper West Region (UWR) has the highest IMR and U5MR nationally; this situation has been the same in the last three large surveys that captured regional and national data on infant and child mortality. This implies that, for the past two decades, the Upper West Region has been and continues to be the most disadvantageous place to live in, as a child under-five in Ghana. The GDHS 2003, MICS 2006, and the GDHS 2008 report the following infant and under-five mortality rates for the Upper West region: IMR (97, 114 and 105 per 1,000 live births respectively), and U5MR (142, 208 and 191 per 1000 live

births respectively). In a comparison of the U5MR by region for Ghana, ICF Macro (2010a) showed that a child under-5 who lives in the Upper West Region is nearly three times (2.8) as likely to die as a child in the Greater Accra Region. The disparity in IMR is equally great; compared to infants in Greater Accra region, infants in Upper West Region are almost three times (2.7) as likely to die before their first birthday.

The household as the producer of health has been unambiguously demonstrated in the most referred to child survival frameworks and models (Mosley & Chen. 1984; UNICEF, 1990; Waldman et al., 1996; World Bank, 2000; Christensen, 2004). These models show how important household practices are and the big impact these practices have on morbidity and mortality of children under-five in all settings.

UWR does not have evidence-base on the household practices on district, sub-district and community basis. The data available, which could serve as proxy, are from large scale surveys such the GDHS and the Multiple-indicator Cluster Survey (MICS), which provide only regional and national estimates, and data from the routine health management information system (HMIS) which provides data on intervention coverage. The large-scale surveys do not show data disaggregated by district and hence cover up significant district differentials that are important for child health programming. When large scale surveys provide data at the district level, the sample sizes are too small to give any reliable meaning to the results. On the other hand, information provided by the routine system even though available on district and sub-district basis, is fraught with under-reporting, inaccuracies and outright dearth of quality (Browne et al., 2005). Until now, two types of child survival programmes – short-term disease-specific initiatives (vertical programmes such as control

of diarrhoeal diseases) and more general programmes (integrated child health campaigns) of primary health care – have contributed to the decline in child morbidity and mortality in the Upper West Region. In order for these two types of programmes to contribute substantially to health systems strengthening and enable households to complete the unfinished agenda of reducing child mortality in the Upper West Region by two-thirds of the 1990 levels, new strategies would be needed, starting with evidence of household practices that are not dependent on the performance of health systems (Claeson & Waldman, 2000).

Even in places where service provision achieves universal coverage, the influence of household practices is recognized. There is the need to make available evidence-based data on household practices to inform child survival programming. In resource-poor settings, the rational of resource use is an important source of health funding. Evidence-based district-level data will equip public health officials with the tools to develop, implement, monitor and evaluate interventions in an effective manner.

The Regional Health Administration (Upper West Region), UNICEF-Ghana, the United Nations Population Fund-Ghana (UNFPA-Ghana), the WHO-Ghana and other agencies, have shown keen interest in local data drawn from surveys with credible sample sizes in order to be able to influence policy required to address the intra-country gaps in child morbidity and mortality. Upper West Region does not have household level data on district basis that capture the intra-regional/inter-district differentials in the prevalence of household practices essential for child survival, growth and development. Systematic and reliable information on household practices key for child survival is lacking at the district level

which is the focus for health action in the primary health care system in the Upper West Region.

The District Health administrations in the Upper West Region have been relying on routine data for health planning, implementation of health programmes and, the monitoring and evaluation of such programmes. The fact that child indicators have stagnated while the region continues to bear the heaviest burden of infant mortality and under-five mortality in Ghana is ample evidence that, current child survival programming is not sufficient to lead to desired declines in mortality. Although there is national and regional level evidence on household child survival practices, the data for sub-regional level are not disaggregated, and hence, the dearth of evidence on practices in districts. Based on the evidence that sickness care and prevention begins in the household, it is important to have data on household coverage of interventions proven to reduce child mortality in all settings. In the Upper West Region, the district level has not paid enough attention to how, in their everyday lives, families and communities engage in promoting the health of their children under-5.

1.4 RATIONALE FOR THE STUDY

The epidemiology of under-5 morbidity and mortality varies among different regions in the world and within countries. Implementation of evidence-based cost-effective interventions in a universal and equitable manner has been proposed for achieving the targeted two-thirds reduction in under-five mortality by 2015 (Jones et al., 2003; Darmstadt et al., 2005; Bryce et al., 2005b). Although data on the causes of death in children under-five are available globally, these estimates are limited by the availability of health monitoring systems to adequately capture child deaths. With limited routine registration of births and deaths in

many low-income countries, child deaths may not be adequately recorded. There are severe limitations to the acquisition of accurate estimates at the regional or district level.

Upper West Region has epidemiological, socio-economic and geographical characteristics quite distinct from the other nine regions in Ghana. The human development index, proportion of families living in poverty and other socio-economic factors, and child health indicators differ in the Upper West Region from the rest of the country. The Upper West Region remains significantly disadvantaged compared with the rest of Ghana.

This study provides household level data by district to show coverage gaps of essential child survival interventions such as: exclusive breastfeeding, appropriate complimentary feeding, ITN use and ORT for diarrhea. These four interventions together could lead to more than a third in the reduction of under-five mortality if implemented at universal coverage. There is undisputable evidence that if all child survival interventions are scaled up such that they reach universal coverage (>99%) of children under-five, they will reduce the U5MR burden by as much as 66% (Jones et al., 2003; Lawn et al., 2005). These interventions are strongly influenced by household practices as shown in the pathways to child survival (Mosely & Chen, 1984, Black et al., 2003). In addition, the study provides data on household demographic characteristics such as maternal education and household wealth quintile which have been documented to influence these essential household practices as well as child health outcomes.

This study applies multi-variate logistic regression models to show the strength of the relationships between the household practices and these maternal factors. Later on, the

study demonstrates whether the differences found in these household practices essential for child survival, differ across districts and whether these differences are significant. The household is of primary interest in this study because it serves as the locus of the production of health which is defined by Berman, Kendall & Battacharyya as a "dynamic behavioural process through which households combine their (internal) knowledge, resources and behavioural norms and patterns with available (external) technologies, services and skills to restore, maintain and promote the health of their members" (Berman, Kendall & Battacharyya, 1988). Such evidence-based data are essential for health planning and management, particularly in resource-poor settings such as Upper West Region. Using the data to guide programming can lead to an overall improvement in the child health status of the region and accelerate Ghana's march towards achieving the MDG-4.

1.5 CONCEPTUAL FRAMEWORK

This study considered a number of theoretical frameworks that seek to describe the household as the producer of health. Based on the study focus of measuring household practices that influence child health, four of six frameworks that aptly met the study requirements were selected to guide the study.

The Mosley and Chen framework (1984) was one of the first to document the factors likely to influence child survival. While there are newer models, the Mosley and Chen model still provides explicitly or implicitly, the conceptual basis for many studies of child survival in developing countries. Henry Mosley and Lincoln Chen stated in 1984 that, attempts to reveal the most cost-effective interventions for child survival were limited by lack of

conceptual models that clearly described the pathways to child survival. Mosley and Chen's proximate determinants of child survival in developing countries model is based on five (5) premises. (Figure 1.2)

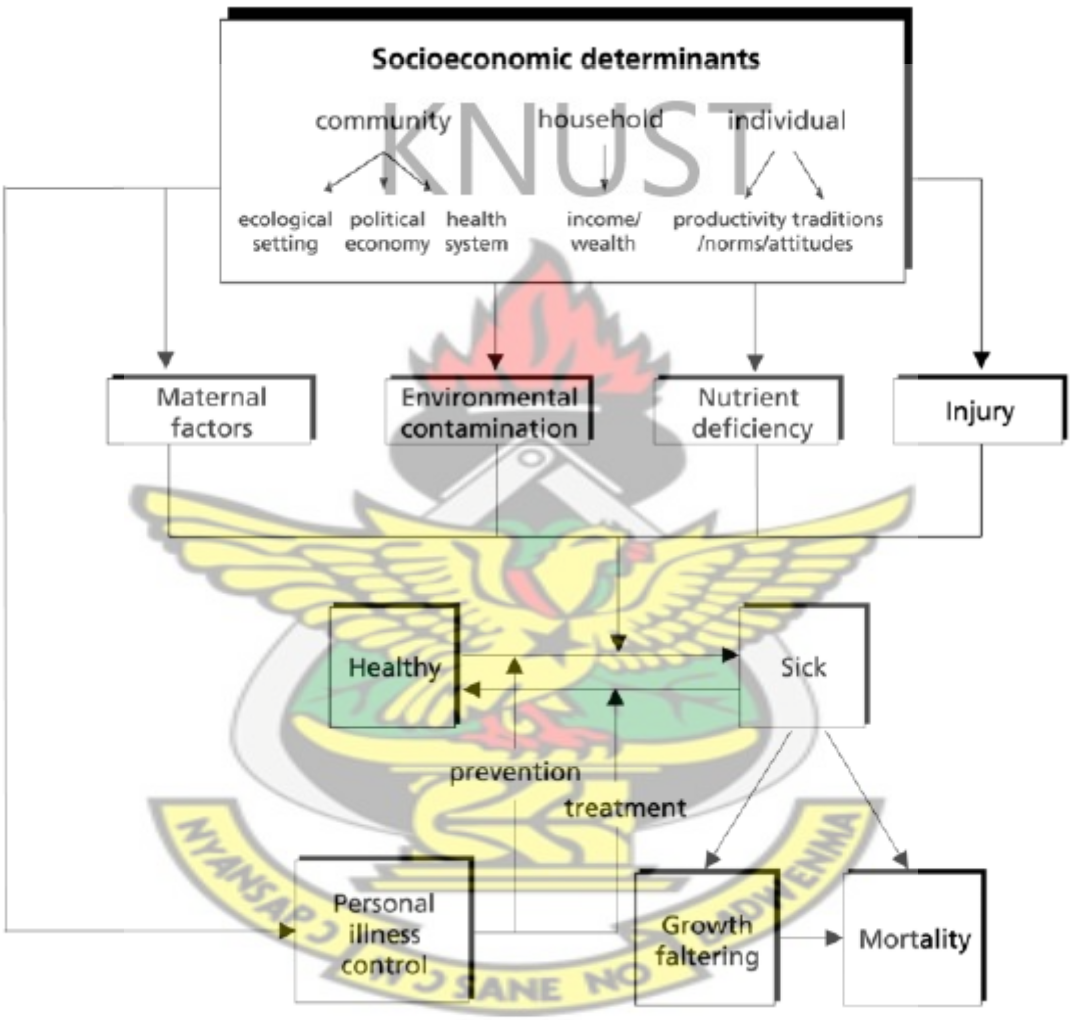


Figure 1.2: Proximate determinants of child survival in developing countries

Source: Mosley & Chen, 1984

This model presents a set of socio-economic determinants (exogenous) which work through a basic core of five categories of proximate or intermediate (biological) determinants, four of which in turn influence the outcome of disease processes or the rate at which children move from a healthy state to a sick state. The fifth category influences both the rate of movement of a child from the healthy to sick state through preventive measures such as vaccinations and micronutrient supplementation, and the rate of movement from the sick state to the healthy state through treatment as in the home management of malaria (HMM). The exogenous individual-, household- and community-level characteristics influence child survival, growth and development through each of these sets of intervening or proximate variables. Socio-economic characteristics at the community level, influence resources for safe drinking water and adequate sanitation facilities (environmental contamination), the availability and quality of health care facilities and or providers (personal illness control), and food security (nutrient deficiency). Climatic characteristics such as weather, season, temperature, humidity and rainfall affect food security, water supply and sanitation, microbial growth and disease transmission. Socio-economic determinants at the household level are highly correlated with income or wealth (Stallings, 2004). The income or wealth of the household will influence housing quality, appropriateness of fuel for cooking and cleaning, food security (quantity and quality), safe drinking water (quantity, availability) and the ability to access and pay for both preventive and curative interventions (personal illness control). The household environment, measured by factors such as source of drinking water and toilet facilities provide important determinants covarying with children's chances of survival (Merrick, 1985; Esrey & Habicht, 1986; Woldemicael, 2000; Stallings 2004; ICF Macro, 2010b). At the individual level, parental and caregiver characteristics such as productivity, adherence to traditions and beliefs impact on proximate

determinants to influence child survival growth and development. Maternal education (linked to productivity), has consistently been observed to have a strong impact on child survival (Trussell & Hammerslough, 1983, McMurray, 1997; Agha, 2000; Stallings 2004, ICF Macro 2010b). Traditional beliefs do influence child survival (Fabrega, 1972; Lesthaeghe, 1989; van de Walle & van de Walle, 1991, Hill et al., 2003); such beliefs may influence the decision to seek care outside the home or access immunization campaigns (personal illness control) or influence feeding patterns in the home leading to malnutrition in children (nutrient deficiency).

The proximate determinants are expected to be exhaustive and include maternal factors (age, birth interval, parity); environmental contamination (air pollution, food/water/fingers, skin/soil/inanimate objects, insect vectors); nutrient deficiency (protein, carbohydrates, micronutrients in terms of adequacy and availability); injury (intentional, accidental); and personal illness control (personal preventive measures such vaccinations and ITN use, and medical treatment such as Home Management of Malaria).

The second framework which was postulated by Waldman and others (1996) can be best described as a rearrangement of the Mosley and Chen model. This model makes an attempt to expand the role of the mother (individual in Mosley and Chen's model), while expanding the relationship between the household/community and the health system (formal and informal). The model by Waldman and others looks at this relationship from two levels with two scenarios, giving a total of four scenarios; first it divides the settings into the household/community and the health system. Then it looks at practices at the household level which influence child survival during sickness and during a healthy state. It gives a

similar account for the health system level. It then shows the relationship between these two levels. (Figure 1.3)

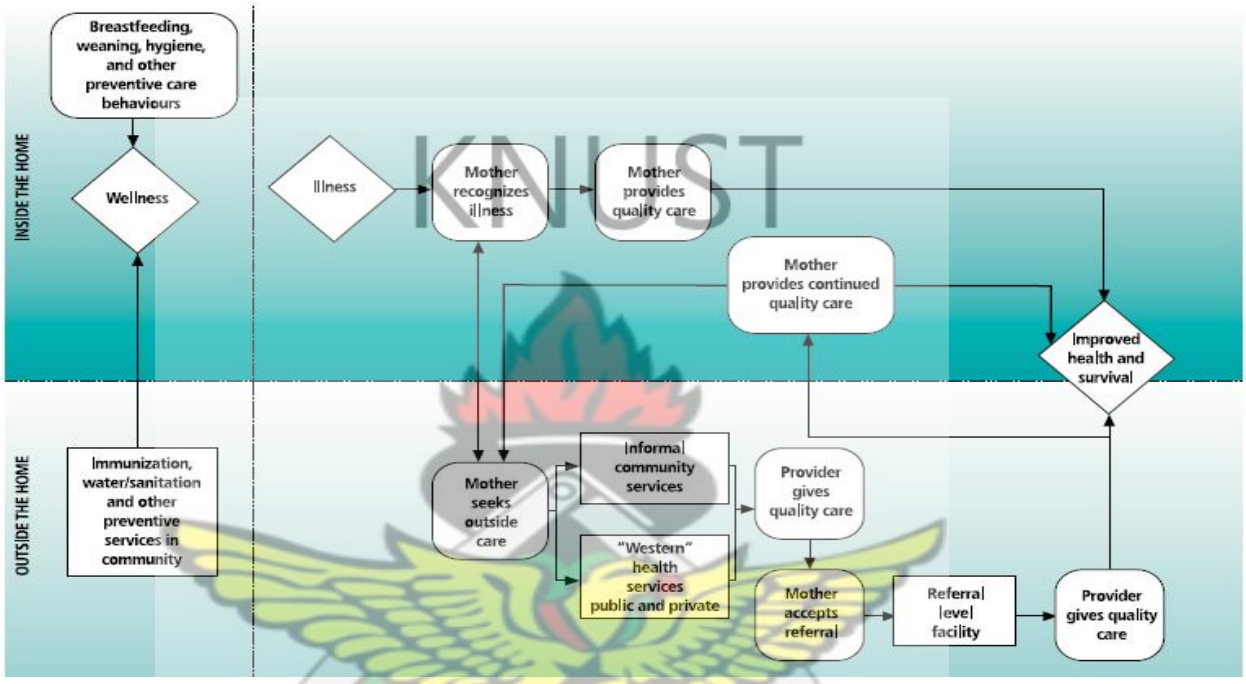


Figure 1.3: **Pathway to child survival**

Source: Waldman et al., 1996

This model, which is also called the 'Pathway to Survival', distinguishes between prevention behaviours such as breastfeeding which can be implemented entirely at home and those such as vaccinations that require a direct contact with the formal health system. It however fails to account for the support required from the formal health system, as in many instances, mothers have to be taught how to breastfeed properly, and be supported by the health system to promote breastfeeding in the face of cultural practices and other factors that discourage the practice.

Another problem is that the model does not take cognizance of the effects of many other factors at both the household level (income, maternal education) and the health system level (accessibility, quality of care). Furthermore, this model gives the impression that every contact between mother and child pair and the health system (formal and informal), that is the result of child illness, ends up in a referral to a higher level of health facility; some first level contacts end up in the mother continuing to provide quality care without referral.

On the other hand, the pathway to child survival model has some good features; it can be used as a quantitative data collection tool for measuring problems in home-based care, health care-seeking behaviour, the quality of care at primary and secondary levels of care, patient counseling, and the compliance of mother and caregivers with reference to health worker advice.

The third framework that this study considered as a guide was the 'Determinants of Child Health Outcomes' model, proposed by the World Bank (2000). This model is a good attempt at a fusion between the models postulated by Mosley & Chen, and that by Waldman and others. The World Bank model captures exogenous variables that take account of the government policies and actions, as a third level of practices in addition to the two described in the pathway to survival model. (Figure 1.4)

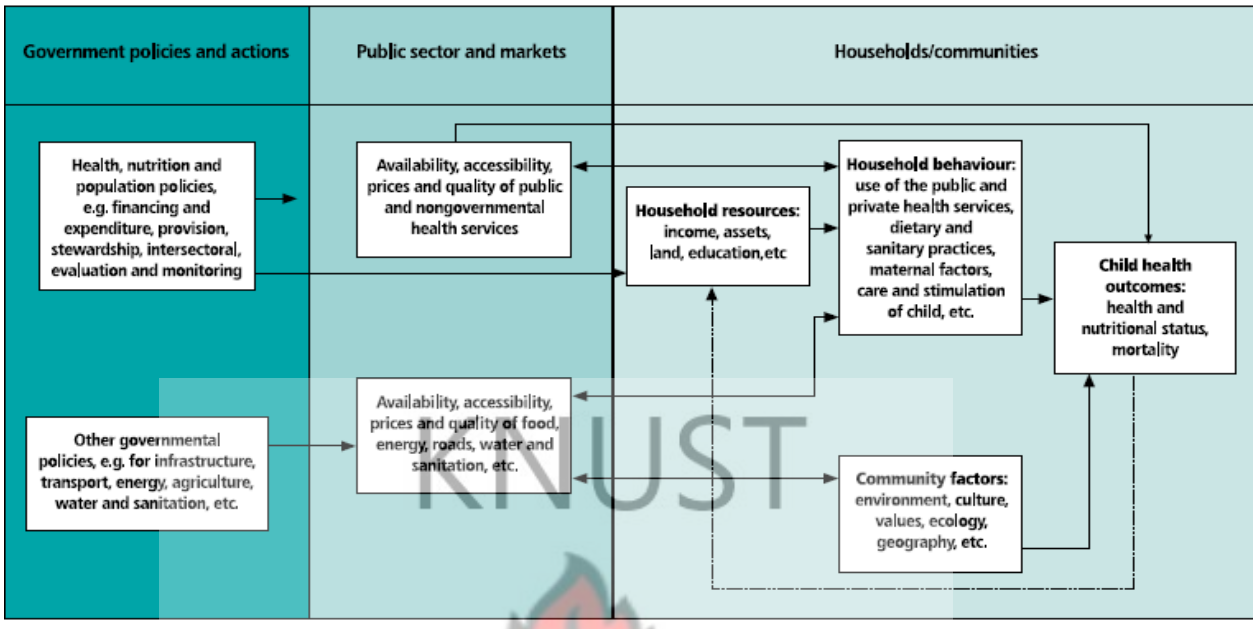


Figure 1.4: Determinants of child health outcomes

Source: The World Bank, 2000.

This model makes more explicit the linkage between health policy formulation – a community level socio-economic determinant in the Mosley & Chen model – and health outcomes. The determinants of health outcomes model, acknowledges health policy formulation as a distal variable that influences a set of intermediate variables such as, health systems interventions and the promotion of appropriate household/community practices, which in turn will affect child health outcomes. Health system interventions such school health programmes, safe motherhood initiative, control of communicable and non-communicable diseases and the integrated management of neonatal and childhood illness (IMNCI), influence household/community practices for child survival, a linkage which the pathway to survival model does not capture clearly.

The World Bank model also acknowledges the importance of health service financing and availability, and the provision of social services such as water and sanitation. Most

importantly, this model stresses the fact that, household/community practices are the most proximate determinants of child survival, growth and development; a fact long established by Mosley and Chen.

Finally, any attempt at considering models for studies on household practices that affect child survival, growth and development, would be considered incomplete if no effort was made to review the model put forward by UNICEF - the 'goddess of child health.' In the UNICEF model, a set of cultural, political and social context variables (similar to the socio-economic determinants described by Mosley & Chen) track their pathway of influence through various intermediate variables to affect child survival, growth and development. Care giving behaviours (exclusive breastfeeding, hygiene behaviours, health seeking behaviour), at the household level are mediators between social (household food security, economic resources), health (health care quality and availability, environmental safety) and mother/caregiver characteristics (level of education, maternal health status, social support). (Figure 1.5)

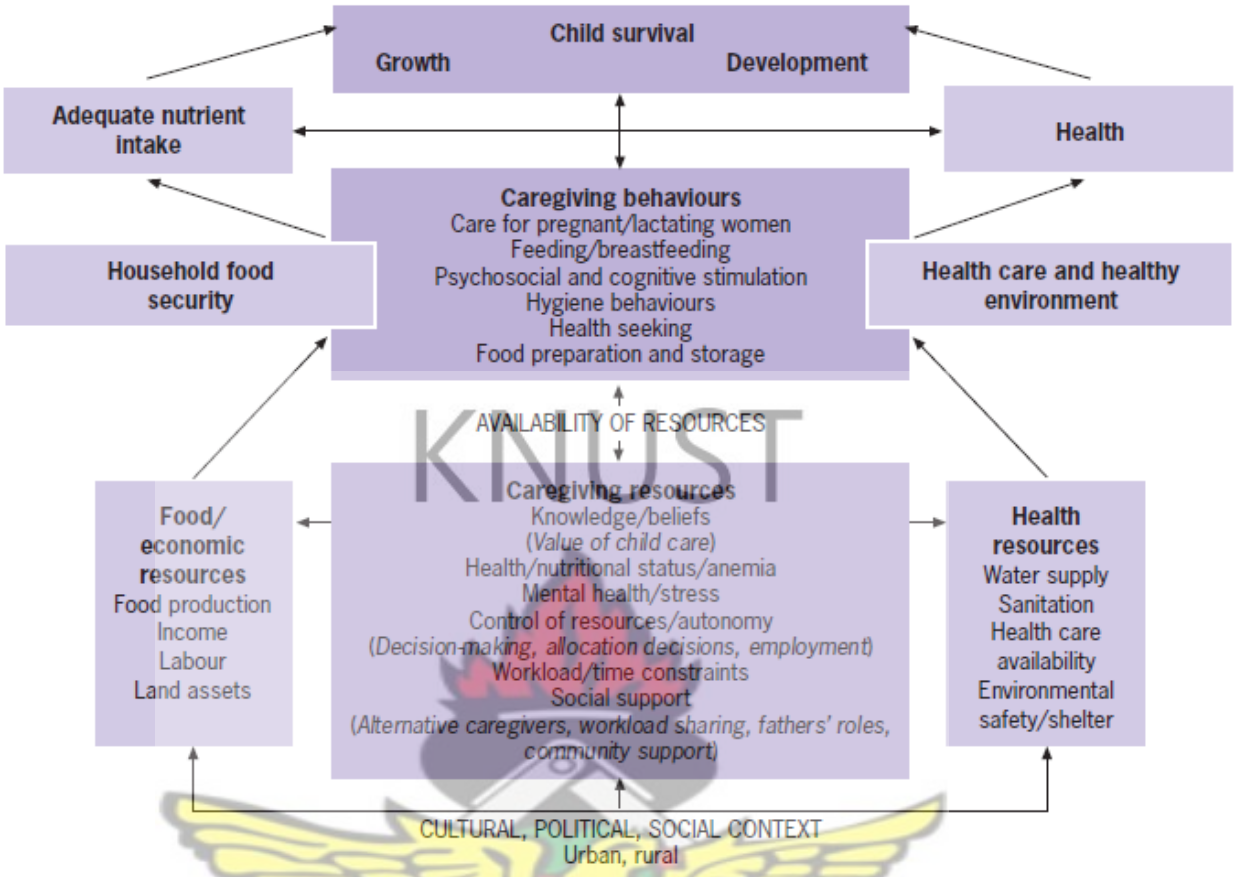


Figure 1.5: The extended model of care

Source: UNICEF, 1990a

Worthy of note; the UNICEF model explicitly recognizes that what happens in the household/community is the most proximate determinant of favorable child health outcomes; care giving in the home is a key determinant of the quality of the environment provided for children for their survival, growth and development.

1.6 RESEARCH QUESTIONS

Based on the conceptual framework put forward by Mosley and Chen, while noting the emphasis UNICEF placed on care-giving behaviours in the extended model of care, and

recognizing the 18 key household practices listed by the Ghana Ministry of Health/Ghana Health Service for child survival interventions, and focusing on the 4-core practices evidenced to individually reduce child deaths by the highest proportions, the main questions addressed by this study were:

1. What are the demographic characteristics of mothers/caregivers of children under-five and household heads in the eight districts of the UWR?
2. Which factors influence the differences (if any), in the 4-core household practices - breastfeeding, complimentary feeding, insecticide-treated net and oral rehydration therapy - across the districts of the UWR?

1.7 AIMS, OBJECTIVES AND HYPOTHESES

The study on household practices related to child survival in the Upper West region aimed to determine the levels of 4-key household practices known to impact child survival, growth and development at the household and community level. The study proposed to randomly locate mothers/caregivers of children under-5 in the then eight districts of the Upper West Region (UWR), with the view to documenting the prevalence of these household practices. Based on the results of this study, recommendations to improve child survival in the UWR are made.

1.7.1 Specific objectives and hypotheses

1. To describe the demographic characteristics of children under-five and their mothers/caregivers, and household heads in the Upper West Region.
2. To determine the prevalence of household practices related to four key interventions that prevent child mortality—breastfeeding, complementary feeding, preparation

and administration of oral rehydration therapy, and the use of insecticide-treated nets.

Hypothesis 2a. Districts in the UWR do not differ by breastfeeding initiation rate.

Hypothesis 2b. There is no difference in the district levels of complementary feeding in the UWR.

Hypothesis 2c. ITN use by children under-5, does not differ across the districts of UWR

Hypothesis 2d. There is no difference across the districts in terms of a mother's skill to prepare ORS

3. To determine whether demographic characteristics of children, mothers/caregivers and households, above and beyond district-level effects, significantly relate to the four practices/interventions with the capacity to reduce child mortality by 41% when implemented together at universal coverage.

Hypothesis 3a. There is no significant relationship between the demographic characteristics (age, ability to read and write English, household wealth) of mothers/caregivers and household heads, and the core-4 interventions known to have the greatest impact on child survival.

1.8 HEALTH PROFILE OF STUDY AREA

1.8.1 Regional health profile

The Upper West Region was carved out of the then Upper Region in 1982, which comprised five (5) districts (Jirapa-Lambusie, Lawra, Nadowli, Sissala & Wa), making it the youngest region in the country. In 2004 the Sissala district was re-demarcated into Sissala East and West districts, and the old Wa District was divided into Wa East, Wa

Municipal, and Wa West districts. The Lambussie-Karne District was also carved out of the Jirapa-Lambussie District in 2008, bringing the total number of districts to (9)nine.

1.8.2 Location

The Upper West Region is situated in the north- western part of Ghana. It lies between longitude 1o 25'' W and 2^{o} 45'' and latitudes 9^{o} 30'' N and 11^{o} N. It is bordered to the south by the Northern region, to the north and west by Burkina Faso, and to the east by the Upper East Region.

There is strong socio-cultural relationship among the border communities and an extensive inter- boundary mobility of people. This has health implications in terms of disease epidemiology, health service utilisation and management.

1.8.3 Size

The region covers a geographical area of 18,476km^{2}, which constitute 12.7% of the total land area of Ghana. The population density ranges from 13 per square kilometre in the Sissala district to 86 per square kilometre in the Lawra district with a regional average of 33 per square kilometre.

1.8.4 Topography

The landscape is generally flat, and below 300m above sea level with a central plateau ranging between 1,000 and 1,150 ft. The Black Volta and its tributaries drain the entire area from Kulpawn to the west and Sissili to the east.

1.8.5 Climate

The climate is tropical with an average minimum temperature of 15^{o}C and maximum of 40^{o}C. There is one major rainy season from April/May-October/November with an intensity

of 100 -115 cm/annum with humidity ranging between 70% - 90% but falling to 20% in the dry season. During the dry season, the cold dry and dusty wind (the harmattan wind), blows from the northeast across the Sahara desert to the region.

1.8.6 Vegetation

The region is located in the Guinea savannah vegetation belt. This is generally semi-savannah with light undergrowth and scattered shrubs. The major economic trees found are Mango (*Mangifera indica*), Dawadawa (*Parkia filicondia*) and Sheanut (*Buterospermium parkii*). The heterogeneous collection of trees provides all domestic requirements for fuel wood and charcoal, construction of houses, cattle kraals and fencing of gardens. The shorter shrubs and grass provide fodder for livestock.

1.8.7 Transport and communication

The region has the shortest distance of tarred roads in Ghana. Only two of the district capitals are linked to each other and to the regional capital by tarred road. The roads linking the region to other regions are not tarred and during the rainy season travelling out of the region by road sometimes becomes virtually impossible. There is a small airstrip in the regional capital but this is rarely used, as there are no commercial flights. The predominant means of transport is by road using lorries, motorcycles or bicycles.

The region boasts of five frequency modulation (FM) radio stations that broadcast in English and in the local languages; Dagaare, Waale and Sissali. Telephone and fax facilities exist in eight districts. All the district capitals and most of the surrounding communities have cellular network coverage. A total of 39 health units including all the hospitals, all the District Health Administrations and the Regional Health Directorate are linked to each other by means of a radio network. This has proved useful in calling for

ambulance service in time of need. Health personnel have also used the radio to consult each other on the clinical management of cases. However a number of them have broken down due to expired batteries or faulty battery chargers and efforts to fix them have not been successful.

1.8.8 Culture and Religion

Christianity, Islam and Traditional African religion are the predominant religions. Traditional life and beliefs, like elsewhere in the country, are more prominent in the rural areas. The notable festivals are the "Dumba" festival in Wa, "Jembenti" of the Kaleo people and other communities in the Nadowli district as well as 'Kobina" and "Kakube" in the Lawra and Nandom traditional areas respectively.

1.8.9 Ethnicity

The three major ethnic groups are the Dagaabas, the Sissalas and the Walas. The Lobis and other minority tribes also live in the region. The long periods of intermarriages notwithstanding, these ethnic groups still maintain some salient cultural features.

1.8.10 Political arrangements

The Regional Coordinating Council (RCC) is the highest political and administrative authority in the Region. The main function of the RCC is to coordinate, harmonize, monitor and evaluate the activities of District Assemblies as well as other Government departments in the region. The 9 districts are divided into 65 health sub-districts.

1.8.11 Traditional Administration

Chieftaincy is a respected institution especially among the Walas and is a major medium for community mobilisation. In all, there are 18 paramountcies in the Region.

1.8.12 Health data

1.8.12.1 Health Service Organization

The regional health services are organized at four levels: regional, district, sub-district and community levels. The regional level comprises the Regional Hospital, which provides primary, secondary and some tertiary referral services and other units such as the Regional Health Directorate. The Regional Health Directorate is the lead management and coordinating unit. It comprises of four Budget Management Centres (BMCs): office of the Regional Director, Regional Public Health Department, Regional Clinical Department and Regional Health Support Services Department.

At the district level, the district health administration is responsible for the overall management and coordination of the district health services, while the district hospital provides both primary and secondary health care. However, four districts are without district hospitals, and one district (Lawra) has two hospitals with the status of district hospital.

Each district is further sub-divided into sub-districts, all totalling 65 in the region. Each sub-district has a health centre for the provision of static and outreach primary health care services to the catchment population however four of these sub-districts are without health centres. Currently there are 765 service outreach points in the region. There are however, three (3) private maternity homes/clinics, three (3) private hospitals and five (5) private clinics providing services in the region. Each sub-district is further demarcated into

Community-based Health Planning and Services (CHPS) zones, which provide close to client health services with the active participation of community members. CHPS is Ghana's contemporary version of Primary Health Care (PHC). There are 197 planned zones to cover the whole region but as at the end of 2008 there were 56 that were operational while 2 others were commissioned at the later part of the year but did not provide services. Twenty compounds were also completed but not functional. There are 966 Traditional Birth Attendants, more than 2,500 community-based agents (CBAs) who carry home-based management of uncomplicated malaria and diarrhoea and promote health at the community/household level. The region has 1005 community based surveillance volunteers, including 385 Guinea worm volunteers working at the community level.

Table 1.2: Sub-districts, hospitals, health centres and CHPS zones by district in the Upper West Region, Ghana

District	No. of Sub-districts	No. of hospitals	No. of HCs	CHPS Zones	
				Functional	Earmarked
Jirapa-Lambussie	13	1	12	7	30
Lawra	10	2	9	7	26
Nadowli	13	1	12	12	34
Sissala East	6	1	5	2	18
Sissala West	4	0	4	2	15
Wa East	7	1	6	9	22
Wa Municipality	6	3*	3	7	21
Wa West	6	0	5	10	31
Region	65	6	56	56	197

*The Regional hospital and one private and one faith-based hospital

Source: GHS-UWR, 2008

The region plans to initiate 197 zones by 2015 from the coverage plans developed by the districts. Out of the 197 earmarked zones, 56 are functional, 38 have CHPS compounds and 4 urban CHPS operating without compounds, about 17 compounds are under construction with some implementation processes on-going in these areas.

Table 1.3: Population of the Upper West Region, Ghana projected from 2000

District	2000 population census	2006 projection	2007 projection
Jirapa-Lambussie	96,834	107,140	108,962
Lawra	87,525	96,841	98,487
Nadowli	82,716	91,520	93,076
Sissala East	85,442	50,065	50,916
Sissala West		44,471	45,227
Wa East	224,066	54,301	55,224
Wa Municipality		110,342	112,599
Wa West		82,898	84,308
UWR	**576,583**	**637,578**	**648,798**

Source: GHS-UWR, 2008

Together the three "Wa districts" have nearly half of the region's population.

Table 1.4: Demographic data for health services in Upper West Region, Ghana (2004 – 2007)

Indicator	% of Total Pop.	Year 2005	Year 2006	Year 2007
Regional population	100	621,482	637,578	648,798
Women in Reproductive Age (15-45) years	20	125,458	127,516	129,760
Expected pregnancies	4	25,091	25,503	25,952
Children 0-11 months	4	25,091	25,503	25,952
Children 0-23 months	8	50,183	51,006	51,904
Children 0-59 months	20	125,458	127,516	129,760
Children 0-15 Years	47	294,824	299,662	304,936

Source: GHS-UWR, 2008

Table 1.5: Top-10 causes of Out-Patient Delivery attendance in the Upper West Region, Ghana, 2006-2007

2006			2007		
Disease condition	**No.**	**%**	**Disease condition**	**No.**	**%**
Malaria	115,687	54.2	**Malaria**	172,906	38
ARI	13,995	6.6	**ARI**	58,907	13
Skin diseases & ulcers	10,877	5.1	**Skin diseases & ulcers**	46,008	10
Acute eye infection	7,009	3.3	**Acute eye infection**	22,486	5
Diarrhoeal diseases	5,074	2.4	**Diarrhoea diseases**	21,437	5
Pneumonia	4,880	2.3	**Hypertension**	16,883	4
Hypertension	3,802	1.8	**Pneumonia**	14,851	3
Anaemia	3,422	1.6	**Rheumatism and Joint**	14,112	3
Malaria in pregnancy	2,891	1.4	**Acute ear infection**	9,124	2
Road traffic accidents	2,785	1.3	**Road traffic accidents**	9,061	2
All others	43,208	20.2	**All others**	70,764	15
Total	213,630	100	**Total**	456,539	100

Source: GHS-UWR, 2008

It is difficult to state what was responsible for the huge increase in OPD attendance between 2006 and 2007 but the establishment of the National Health Insurance Scheme (NHIS) may account for some of these numbers.

Table 1.6: Top-10 causes of hospital admissions, Upper West Region, Ghana (2006 – 2007).

2006			2007		
Disease Condition	**No**	**%**	**Disease Condition**	**No**	**%**
Malaria	6,882	23.1	**Malaria**	11,779	31.9
Gynaecological disorders	1,175	3.9	**Anaemia**	1,278	3.5
Anaemia	1,065	3.6	**Hypertension**	1,234	3.3
Accidents	904	3.0	**Pneumonia**	985	2.7
Hernia	709	2.4	**Hernia**	984	2.7
Pneumonia	663	2.2	**Accidents**	967	2.6
Snake bite	464	1.6	**Pregnancy complications**	918	2.5
Pregnancy complications	403	1.4	**Caesarean section**	902	2.4
Hypertension	377	1.3	**Snake bite**	758	2.1
Asthma/Bronchitis/ URTI	349	1.2	**Gynaecological disorders**	629	1.7
All others	16,828	56.4	**All others**	16,522	44.7
Total	29,819	100.0	**Total**	36,956	100.

Source: GHS-UWR, 2008

1.8.12.2 Distribution of Insecticide Treated Nets

The region received a total of 41,375 ITNs in 2007. Health development partners such as UNICEF provided 28,725 while the Global Fund contributed 11,650. These nets were distributed to the target vulnerable groups (pregnant women and children under 5 years of age) in the region. Apart from that, the region also received 62,000 nets that were distributed free of charge to children during the measles special immunization activity; 4,914 of these nets were distributed to children 0 – 23 months.

1.8.12.3 HIV sentinel surveillance

In 2007, the overall prevalence rate of HIV for Upper West Region was 3.3%. The Jirapa site recorded a rate of 3.3% while Wa recorded 5.8%.

1.8.12.4 Antenatal Services

The percentage of pregnant women registering at the antenatal clinics in all districts since 2006 continues to be above 70%. The coverage in 2007 was 96%. The average number of visits to antenatal clinics by pregnant women has seen a steady improvement across all the districts except in the Wa East District where it has stagnated at 2 visits per pregnant woman. The regional average was 3.4 in 2007. The coverage for 4+ visits was 59%.

1.8.12.5 Supervised Deliveries

Skilled delivery has been increasing steadily. One-third (33%) of pregnant women delivered under skilled supervision in 2007 compared with 27% in 2006.

1.8.12.6 Traditional Birth Attendant (TBA) Deliveries

TBA deliveries continue to be in high demand in the Sissala West and East districts; a little over half of all women deliver under TBA supervision in the two districts. In 2007, a total of 29 maternal deaths were recorded in health institutions across the region; 28 (97%) of these deaths were audited. The main causes of death were post-partum haemorrhage, anaemia and hepatic failure.

1.8.12.7 Postnatal Care (PNC)

Postnatal registrants for 2007 increased compared with 2006; 18,195 (70.1%) compared with 16,458 (64.9%). Wa East had the highest coverage of 75.4% and Wa West recorded the lowest of 50.9%. More than half of PNC registrants (58%) accepted to use

contraceptives. Wa municipality recorded the highest (69%) while Wa East recoded the lowest (31%).

1.8.12.8 Family planning

In 2007, Depo Provera (41%), was the most sought after contraceptive, while combined oral contraceptive pills (25%) and the male condom (19.4%) were the others in demand. There was no vasectomy acceptor.

DISTRICT CHARACTERISTICS

1.8.13 Jirapa-Lambussie district health profile

The total area of the district is 1,667 square kilometers. This constitutes about 9% of the Upper West Region's area of 18,476 square kilometers. The capital of the district is Jirapa. Other major towns are Hamile, Lambussie, Han, Piina, Tizza, and Kami

It shares boundaries to the south with Nadowli District, to the east with the two districts in Sissala, to the west with Lawra District and to the north with Burkina Faso, therefore serving as an entry point into Burkina Faso from North-western Ghana.

The 2005 projected population of 96 834, is made up of 51 334 females and 45 500 males representing 53% and 47% respectively. Jirapa-Lambussie District is the second most densely populated district with a density of 58.1 persons per square kilometer; almost double the regional density of 31.2 persons per square kilometre; there is an emerging pressure on land and other resources.

About 5% of the people live in the major towns of the district while a significant 95% live in smaller settlements. The district is therefore considered a rural district. The major tribes

are the Dagaabas, and Sissalas. However, at Hamile, minority tribes such as Moshi, Wangara, and Walla among others can be found. About 80% of the people are engaged in agriculture and other related activities. The major crops are millet, maize, cotton and groundnuts. Livestock farming is practiced throughout the district.

The district hospital at Jirapa is a 193-bed facility, and the other facilities of the formal health system are: three health training schools, 13 health centres and three (3) community-based health planning and services (CHPS) compounds cater for the health needs of the people of the district. The district hospital serves as an HIV sentinel site. The district plans to set up 30 CHPS zones. The doctor to population ratio is 1:26,337 while that for nurses is 1:1,145.

Table 1.7: Top-10 OPD causes of attendance to health facilities in the Jirapa-Lambussie District, Upper West Region, Ghana (2004-2005)

2004			2005		
Condition	**Frequency**	**%**	**Condition**	**Frequency**	**%**
Malaria	25,554	39.4	**Malaria**	26,369	44.6
Acute Respiratory Infection	4,067	6.3	**ARI**	4,416	7.5
Jaundice/hepatitis	3,679	5.7	**Skin diseases**	3,537	6.0
Skin diseases	2,824	4.4	**Cataract**	1,601	2.7
Anaemia	1,478	2.3	**Acute eye infection**	1,577	2.7
Acute eye infection	1,372	2.1	**Diarrhoeal diseases**	1,543	2.6
Diarrhoeal diseases	1,330	2.0	**Intestinal worms**	825	1.4
Accidents	1,040	1.6	**Pneumonia**	646	1.1
Intestinal worms	937	1.4	**Acute ear infection**	625	1.1
Ear infection	753	1.2	**Accidents**	568	1.0
All others	21,877	33.7	**All others**	23,491	30.6
Total	64,911	100.0	**Total**	79,605	100.0

Source: GHS-Jirapa-Lambussie, 2006

Malaria cases dominated the causes of OPD attendance for the period 2004-2005. Even though the data are not disaggregated by age, acute respiratory infections (ARI), diarrhoea and intestinal worms which are common to children under-5, were recorded in the top-10 causes of OPD attendance.

Table 1.8: Top-5 causes of death at hospitals in the Jirapa-Lambussie District, Upper West Region, Ghana (2004-2005)

2004			2005		
Condition	**Frequency**	**%**	**Condition**	**Frequency**	**%**
Malaria	32	14.2	**Malaria**	29	14.7
Anaemia	24	10.7	**Meningitis**	14	7.1
Pneumonia	15	6.7	**Hepatitis**	12	7.1
HIV/AIDS	10	4.4	**Heart failure**	9	4.6
			Hypoglycaemia	9	4.6
All others	144	64.0	**All others**	99	50.0

Source: GHS-Jirapa-Lambussie, 2006

As expected, malaria was the single most important cause of death and children under-5 might be involved.

In 2005, 1245 children under-2 years were weighed at various nutrition sentinel sites across the district; 379 (30.4%) were under-weight, 209(16.8%) were wasted and 349(28%) were stunted. In 2003, out of 171 people screened for HIV, 63 (19%) were found to be positive. In 2004, out of 231 people screened 89(38%) were found to be positive; more than double the previous year's figure. In 2005, out of 945 people screened, 142 (19%) were found to be positive.

1.8.14 Lawra district health profile

The Lawra District derives its legal existence from Legislative Instrument (L.I) 1434 of 1988. The district lies in the north-western corner of the Upper West Region; between

latitudes 2^0 25W" and 2^0 45" W and longitudes 10^0 20" N and 11^0 00" N. It is bordered to the east and south by the Jirapa-Lambussie District and to the north and west by the Republic of Burkina Faso. The total area of the district is put at 1,051.2 square kilometres. This constitutes about 5.7% of the Upper West Region's total area, which is estimated at 18,476 square kilometres.

The district is gently rolling with four hills, ranging between 180m and 300m above sea level. The area is under-laid by Birimain rocks, rich in mineral deposits. It is drained by one main river - the Black Volta, to the West where it forms a boundary between the district and the Republic of Burkina Faso. The Black Volta has several tributaries in the district; notable among them are the Kamba-Dangbang, Nawer, Duobaa, Nandomlebaa and Kokoligu-baa.

The 2000 National Population and Housing census projected the district's population at 87 525 for 2005. This is about 15% of the UWR's total population of 576 583. This comprises 40 804 males and 46 723 females representing 47% and 53% respectively. The growth rate of the district is 1.7 %. This is below the national growth rate of 2.7%. The distribution of the population into rural and urban is 75,484 (86%) and 12,041 (14%) respectively. The population is distributed among one hundred and fifty-three (153) communities; two communities, Nandom and Lawra are the only urban ones with populations greater than 5000. The population density of the district is as high as 93 persons per square kilometer; making it the most densely populated district in the region with a density almost thrice the regional population density. There is intense pressure on the natural resources particularly land for agricultural production as well as socio-economic facilities.

A majority of the people are subsistence farmers while a few along the banks of the Black Volta engage in fishing. Most of the women engage in *pito* (local brew) brewing, petty trading and Shea butter extraction. The most predominant tribe in the district is the Dagaaba.

Currently, the Lawra District has 404 boreholes fitted with hand pumps and spread across the district. The district would need additional 30-50 boreholes to ensure universal access to safe drinking water. The district has two hospitals- (a district hospital at Lawra and one Christian Health Association of Ghana (CHAG) hospital at Nandom). Health centres provide primary health care services in 10 sub-districts. There is a private maternity home in Nandom and one private clinic in Babile. Over 200 TBAs operate in the district.

The Nandom hospital is a 141-bed health facility that serves a population of 47 511. It renders both curative and preventive services to the surrounding districts, sub-districts as well as neighboring Burkina Faso. It also serves as a referral point for all the sub-district facilities. However, there is no specialist doctor in the hospital. The district hospital in Lawra has 62 beds and a catchment population of 43 614.

1.8.15 Nadowli district health profile

Nadowli district is located at the centre of the Upper West Region of Ghana. It lies between latitudes 11^0 3' and 10^0 20" N and longitudes 3^0 10" and 2^0 10" W. It is bordered to the south by Wa District, West by Burkina Faso, to the North by Jirapa-Lambussie District and to the east by the two districts in Sissala. It covers a total land area of 2,742.50 square

kilometres and extends from the Billi bridge (4km from Wa) to the Dapuori bridge (almost 12km from Jirapa).

The 2000 Ghana Population and Housing Census projected the 2005 population of the district at 82 716, this gives the district a population growth rate of 1.5% per annum, which is below the regional and national growth rates of 2.3% and 2.7% respectively. The district is predominantly rural with only 11 communities with populations above 2000. In terms of distribution, the district's population is concentrated in the western part of the district. Therefore, most of the major settlements are also concentrated around this portion with the high-density areas around the district capital Nadowli.

The age-sex structure of the district is typical of the rural Ghanaian situation. About 45% of the population is aged between 0-14 years while 49% constitutes the economically active population with the remaining 6% being the aged. The district has an age dependency ratio of 1:1.04 while the economic dependency ratio of the district stands at 1: 1.12 compared with the national ratio of 1:0.871. Agriculture accounts for about 85% of the labour force while commerce and service, and industry account for 14% and 1% of the labour force respectively. The mean annual household income of the district is GH¢ 480. Agriculture accounts for 49% of the total annual income of the district. Commerce accounts for 36% and this is followed by service 15%.

The district has two major tribes, the Dagaaba who are the majority and constitute 96% of the total population and the Sissala who are 3% and can be found in the south-eastern parts of the district. Other tribes of northern and southern Ghana constitute only 1% of the total

population. There are 4 religious groups in the district namely Christians 59%, Moslem 18% and Traditional religion 23%.

The district is currently served by the small towns and rural water systems, which are owned and managed by communities through their water boards. There are 240 boreholes located in the communities, out of these, 119 are functional. Presently there are about 27 communities are without any form of improved water facility. In the recent past, communities including Pelbuo and Naro have been victims of the Guinea worm disease as a result of the non-availability of potable water. About 67.1% of the total population has access to improved water sources compared to the regional and national coverage of about 90% and 74.1% respectively. It is currently estimated that only 11.1% of the population has access to improved toilet facilities. However, due to improper management and maintenance most of the facilities have been neglected and people resort to open defecation. The district health sector can be categorized into two major components; public and private. The Ghana Health Service runs the public sector providing both curative and preventive care at the district hospital, health centres and outreach stations. Community-based disease surveillance volunteers have also been trained to assist in surveillance activities.

Currently there are two hospitals, one government (district hospital) and one private (Ahmadiyya Moslem Hospital), located in Nadowli the district capital and Kaleo respectively. The formal health system has 148 outreach points for health service delivery. The distribution of existing facilities is concentrated in the western half of the district. The eastern half has just two facilities, one at Issa and the other at Kojokperi. The average distance to a health facility in the district has reduced from 16km to about 9km. In addition to the two hospitals, the District has 13 health centres and 8 community clinics. The current

doctor-patient ratio is 1: 18,387 while the nurse to population ratio is no better as it stands at 1:1,406.

Drug outlets form a large proportion of the private health sector including chemical sellers and unlimited number of drug peddlers who are mostly semi-literate but are very good salesmen. These drug peddlers can be categorized into three; peddlers of herbal medicine, peddlers of biomedicine moving from community to community and the neo-herbalists who sell both herbal and orthodox drugs. A very important group of practitioners in the health care system are the TBAs who are spread all over the district.

The current top-three diseases are malaria, ARI and skin diseases compared to malaria, arthritis and pneumonia in 2004. With the exception of malaria, there has been a considerable drop in the incidence of most of the top-10 causes of OPD attendances. Surveys conducted by the GHS in the markets indicate iodine deficiency in the cooking salt on the market. The district has experienced an increased coverage of immunization against vaccine-preventable diseases between 2003 and 2005. In 2005, 29 clinical cases of HIV/AIDS were recorded as against 11 cases in 2003. During the same period, blood donor cases also increased from 1 to 14.

Table 1.9: Top-10 causes of OPD attendance to hospitals in the Nadowli District, Upper West Region, Ghana (2004-2005)

2004			2005		
Condition	**Cases**	**%**	**Condition**	**Cases**	**%**
Malaria	23,554	47.8	**Malaria**	26,589	62.6
Arthritis	9,392	15	**ARI**	5160	12
Pneumonia	4,385	8.9	**Skin diseases**	4,464	10.4
Injuries	2,643	5.4	**Malaria in pregnancy**	1,616	2.4
ARI	2,519	5.1	**Eye infection**	1,027	2.4
Eye infection	2,008	4.1	**Pneumonia**	970	2.2
Skin diseases	1,957	4.0	**Diarrhoea**	936	2.2
Diarrhoea	1,744	3.5	**Injuries**	694	1.6
Malaria in pregnancy	1,715	3.5	**Intestinal worms**	651	1.5
Hypertension	1,257	2.6	**Arthritis**	629	1.5
Total	49,174	100.0	**Total**	43,119	100.0

Source: GHS-Nadowli, 2006.

The mean annual household expenditure for the district is estimated to be GH¢50 while the average monthly household expenditure is GH¢42. This shows a gap between household expenditure and income. The gap is filled by remittances from family members and friends. This situation implies that it will be extremely difficult for households to effectively make financial contributions towards development projects and also expand their businesses.

1.8.16 Sissala East District health profile

The Sissala East District is located in the north-western part of Ghana in the Upper West Region. The district has a total land size of 4,744 sq km - representing 26% of the total landmass of the region. The district capital is Tumu. The district is strategically positioned as it shares a 300 kilometre border with Burkina Faso. To the east, it shares boundaries with Kassena-Nankana and Builsa districts, of the Upper East Region while its extreme south-eastern portion shares a boundary with the West Mamprusi District of the Northern Region. Its neighbours in the Upper West Region are Wa and Nadowli districts to the south and Jirapa-Lambussie District to the west.

The topography of the Sissala East District can be described as gently undulating. It is generally characterized by gentle altitudes of between 330m and 365m in the northern part descending to 220m and 290m in the Valley of the Sissili River. The district is mainly drained by the Sissili River and its tributaries flowing in the south-eastern direction to join the White Volta River. This is coupled with several tributaries and other unnamed streams.

The district population is currently estimated at 51 182 (2005) with an annual growth rate of 1.7% and a population density of 12 persons per square kilometre which is lower than the regional and national averages of 2.4% and 2.7% respectively. The only urban settlement is Tumu.

The Sissala East District is projected to have 8 570 households living in about 5 852 houses. The household size in the district is about 8.4 with 46.5% of them very large, with

9 or more people per household. The mean household size in rural areas is larger than in Tumu. The age structure is typical of a young population, and more than 85% of the population lives in the rural settlements. The amenities and assets available to a given household are indicators of its socio-economic status. In the Sissala East District, about 11% of the households have access to electricity. The main sources of drinking water are protected wells, boreholes, rivers and streams with the only pipe system in Tumu. Majority of the households share toilet facilities with one or more households. Mud and thatch are the major building materials used; especially in the rural communities with sand-crete buildings and aluminum roofs occurring mainly in the relatively larger communities. The main fuel for cooking in most of households is firewood (80%) and charcoal (19%) with the remaining 1% using Liquefied Petroleum Gas (LPG). More than 70% of the households own basic items such as radios. The common means of transport among household are motorcycles and bicycles.

The level of formal education among adults is very low; about 92% of the total population has not had any formal education. A large percentage (84%) of the population lives below the poverty line, earning far less than GH¢ 90 per month. Most of the residents (76%) are engaged in subsistence agriculture and its related activities. Cash crops such as Shea nut trees and Dawadawa also contribute greatly to income generation. Livestock rearing also plays a key role in the agriculture development in the district since many families produce them for both home consumption and the market. The industrial activities in the district include; Shea butter processing; groundnut oil extraction; weaving and dress making; pottery and basket weaving; blacksmithing; *pito* brewing; carpentry and masonry; vehicle repairs and vehicle repairs. The agricultural sector contributes to 76% of

the local economy while service and commerce contribute 15% and the industrial sector 9%. The Sissala East District is primarily rural with more than 80% of the people living in rural settlements.

The district has five main ethnic groups: the Sissalas (88%), the Kassenas (5%), the Dagaabas (3%), the Moshies (2%) and 2% other ethnic groups. The religious composition in the district includes Moslems-80%, Christians-10%, Traditionalists-5%, and others accounting for about 5%.

The district hospital in Tumu is the only hospital in the district. The formal health system in the Sissala East District consists of 1 district hospital, 5 health centres (HC), 1 CHPS zone and 1 mother/child health and family planning (MCH/FP) clinic and ten community nutrition centres. In total approximately around 100 persons are employed as technical and non-technical health staff. The district has one permanently employed Ghanaian doctor and two Cuban doctors. The informal health system has the following main actors: trained Traditional Birth Attendants (TBA), Community Based Disease Surveillance Volunteers (CBDSVs), chemical sellers and traditional herbal units.

1.8.17 Sissala West district health profile

The district is located in the north-western part of the Upper West region. It lies approximately between longitude 2^0 13" W to 2^0 36" W and latitude 10^0 0" N to 11^0 0" N. It shares boundaries with the Jirapa-Lambussie District to the west, Sissala East District to the east and Burkina Faso to the north and Wa East District to the south. The district's border with Burkina Faso will facilitate cross-border socio-economic activities. However, this has its own implications for health and crime. The district has a total land area of 4,11289km,

which is about 25% of the total landmass of the Upper West Region. The land forms of the district is low lying but gently undulating at altitudes ranging between 150m and 300m above sea level. However some parts average 600m above sea level. The main river that passes through the district is the Kulpawn and its tributaries. The relatively low lying nature of the district coupled with a number of streams imply that dams can be constructed along these rivers especially the major ones to supplement the water requirement of farmers especially during the dry season.

Based on projections from the 2000 Ghana Population and Housing Census, in 2005, the district has a projected population of about 51,015 with a growth rate of 1.7%. This low population growth rate in the district should be seen as an asset to be maintained and reinforced through conscious policy, promotional and educational measures. The district has a population density of 12 persons per square kilometre. This figure is much lower than the regional population density of 31.2 persons per square kilometre. The population of the district is entirely rural. None of the settlements in the Sissala West District is urban. Only 15 communities in the district have population above 1000.

The proportion of population below 15 years is about 44.7% while that of the elderly represents about 6.3%. On the other hand, the proportion of the labour force (between 15 and 64 years) stands at 49% of the total population. The age dependency ratio of the district is 1: 96. The sex composition of the population indicates that there are 49.2 % males and 50.8% females in the district. The district has an average household size of 8.4. The building material used in the district reflects the natural environment of the place. Majority of houses use mud/earth for the outer wall. The roofing material comprises thatch from

grass, corrugated metal sheet and wood. In terms of dwelling units, about 55.8% are compound houses.

The district does not have a hospital. There are four health centres spread across the district that provide health care services to the people of the district and beyond. The limited number of health facilities implies that the unorthodox health service delivery will be patronized with its attendant consequences. The TBA delivery rate is higher than that of the formal health sector due to poor geographical access to the health facilities. Malnutrition in children under-five is very high in the district. This is attributed to the lack of appropriate complementary feeding and non-adherence to exclusive breast feeding. The district has been zoned into 14 CHPS zones; only one is functional. The disease pattern of the district is similar to that of many rural districts and the country at large. Malaria continues to be the leading cause of morbidity and mortality in the District. There is a high district prevalence of water and sanitation-related diseases. In 2004, ARI was not a major disease. However in 2005 ARI appeared as the second most important disease in the district.

On the average, 81 % of the population has access to improved water sources; the district has 147 functional boreholes. However, only 5% of the population has access to improved sanitation facilities. Currently, the District has about 12 ventilation improved pit latrines (VIPs) and 242 household latrines. As there is low coverage of sanitation facilities, especially toilets, the major method of human excreta disposal is open defecation.

1.8.18 Wa East district health profile

The Wa East district was carved out of the Wa municipality. The district is remotely located in the southeastern part of the Upper West Region. The capital is Funsi, about 115km away from Wa, the regional capital. The district shares boundaries with West Mamprusi to the north-west, West Gonja to south-east and the Sissala East District to the north.

It has a landmass of about 1,078km², which lies between latitudes 9º 55" N and 10º 25" N and longitude 1º 10" W and 2º 5" W. The remoteness of the district relative to other districts of the region has deprived it of basic social and economic infrastructure and services.

The population of the district for 2005 was estimated at 66358 with an annual growth rate of 1.7%. The population is youthful comprising 47% (between 0-14 years), 49% between 15-64 years and 4% over 60 years old. The soil fertility of the district has attracted migrant farmers and Fulani herdsmen from the nearby districts of Nadowli and Jirapa-Lambussie, and Burkina Faso into the district. There are four major tribes in the district; Wala (45%), Sissala (21%), Chakali (19%) and Dagaba/Lobi (15%). The dominant religion is Islam (about 70%), Christianity (about 10%) and Traditional religion (about 20%).

Human settlement is highly dispersed and is typical rural. Forty percent (40%) of the population, that is 25 settlements, is concentrated at the northeastern part of the district occupying about 10% of the landmass of the district. Houses are scattered in compounds with average household size of 8 persons. Each compound consists of a number of family

units who are normally related by blood or decent. Houses are normally built with mud bricks and roofed with thatch.

Agriculture and small scale- agro-processing accounts for over 90% of the district labour force and 10% are in commerce. The economy of the district is thus agriculture-based. The major crops cultivated include, sorghum, millet, maize, cassava. Other crops are cowpea, bambara beans, groundnuts and rice. Soya beans, cashew, cotton and mangoes are also cultivated mainly for sale while shea nuts are also gathered and processed into butter for cooking, cosmetics and medicinal purposes. About 67% of farmers rely on animal drawn implements while 33% of farmers use labour-intensive methods of the hoe and cutlass. Farming is rain-fed and limited to the single rainfall regime from May to October and remains subsistent throughout the district. However, the district is able to produce enough food and livestock making it the 'food basket' of the region. There are no transport services for people in the district to travel within and outside the district except on market days. Motor- and push bicycles are the major forms of transport in the district. Poor feeder roads link communities in the district. More than 40 % of roads are inaccessible throughout the year. Agricultural produce gets locked-up in these inaccessible areas of the district. Post-harvest losses are therefore high and it worsens the poverty situation of families in these areas. The district is not connected to the national grid. It is important to note that about 95% of the people in the district depend on kerosene, fuel wood and charcoal for cooking. Most communities depend on boreholes for drinking water.

The district does not have a district hospital. It has six health centres, three CHPS compounds and one private clinic. The ratio of nurses to patients is 1:3686 as compared to the regional ratio of 1:143.

Table 1.10: Maternal health service delivery in the Wa East district, Upper West Region, Ghana (2003-2005)

Indicator	2003	2004	2005
ANC	1096	1252	1283
Institutional deliveries	9	14	80
TBAs deliveries	879	857	907
Family Planning	1686	1903	2296
PNC	969	1023	1174

Source: GHS-Wa East, 2006

Table 1.11: Immunization figures for the Wa East District, Upper West Region, Ghana (2003-2005)

Year/antigen	2003	2004	2005
BCG	2386	2744	2908
OPV 3	2175	2586	2986
PENTA 3	2175	2586	2986
Measles	1972	2689	2462
Yellow fever	1879	2659	3108
Tetanus	1209	1081	824

Source: GHS-Wa East, 2006

Table 1.12: Top-10 causes of OPD attendance in theWa East District, Upper West Region, Ghana (2005)

No.	Disease	Cases	%
1	**Malaria**	12,110	62.5
2	**Ari**	1,836	9.5
3	**Skin Disease**	1,814	9.4
4	**Diarrhoea**	975	5.0
5	**Accident**	741	3.8
6	**Acute Eye Infection**	540	2.8
7	**Intestinal Worm**	417	2.2
8	**Pneumonia**	409	2.1
9	**Acute Ear Infection**	285	1.5
10	**Anaemia**	246	1.3
	Total	**19,373**	

Source: GHS-Wa East, 2006

Table 1.13: Proportions of severely malnourished and at risk of malnutrition children under-five in the Wa East District, Upper West Region, Ghana (2005)

Indicator	Severely malnourished	At risk of malnutrition
0-11 months	0.7	17.6
12-23 months	1.1	35.3
24-59 months	1.8	32.1
Total (%)	3.6%	85.0%

Source: GHS-Wa East, 2006

1.8.19 Wa West district health profile

The Wa West District is among the 28 newly created districts in Ghana. It has five Area Councils, namely: Dorimon, Ga, Gurungu, Vieri and Wechiau with approximately 193 communities. It is located in the north-western part of the region. It stretches from longitudes 40^0N to 245^0N and from latitudes 9^0 W to32^0 W, thus covering an area of approximately 5,899.3 square kilometers. To the south, north-west and east, it has a common boundary with the Northern Region, Nadowli district and Wa municipality respectively, and to the west with Burkina Faso. There are very little commercial and no political activities between the district and Burkina Faso, the Black Volta River which forms the common boundary between the district and Burkina Faso does not have a bridge to link the two.

The Black Volta and its tributaries drain the district. Most of the tributary streams are seasonal thus disrupting communication during the rainy season along all the major roads to the district capital. The district is underlain predominantly by Precambrian, Granite and Metamorphic rocks. These have seen less weathering due to low rainfall, high evaporation and less vegetation. Nevertheless, water harvesting from boreholes has been successful because the rocks have well- developed fracture systems. Bush burning is very rampant in the district. Every year a lot of the vegetation and soil micro-organisms are lost due to this activity. Over grazing leaves the soil bare thereby exposing it to erosion which eventually makes the soil infertile. Over tillage of the soil is common in the district. All these lead to loss of soil moisture, a condition which affects plant growth. As a result, soil moisture conditions are only adequate for the cultivation of crops as guinea corn, yam, groundnuts, millet and cowpea. The result is yearly poor harvest and consequently, inadequate food security in the district.

The 2005 population is projected at 77,377. Generally there is no major concentration of population in the district. The district is predominantly rural; there is no community with population greater than 2000. Communities in the district are scattered, with a minimum of about 100-200 people in a community except in a few cases. In most of the communities, the people live in a close network of houses which are surrounded by permanent farms. A family-head heads each grouping of houses which ranges from 20-50 people. Essentially, the head of the family controls the resources of the grouping. The youth constitutes approximately 45.6% of the total population while the proportion of the aged (60 years plus) accounts for about 6.9%. The economically active population (18-60 years) accounts for 47.5% of the district's population, giving the dependency ratio of approximately 1:1

The male population constitutes 52% while the female population constitutes 48% of the total population. Migration is mainly out of the district and largely involves the youth. The trend now is that more of females migrating to southern Ghana to serve 'as "*kayayo*" or "*tavama*". Male migration is often seasonal, occurring during the dry season, when there is no work at the farm. They migrate to serve as farm hands with some of them undertaking truck pushing. Migration has a serious consequence on the development of the district: loss of productivity, the possibility of contracting HIV/AIDS and other STIs as well as unplanned pregnancies.

The district has 12 pre-schools, 51 primary schools, 32 Junior High Schools and 1 Senior Secondary School. Most of the schools in the district are under-staffed, especially schools located in the most deprived parts. There are instances where only one teacher oversees all classes in the primary or all subjects in the JHS. Quite a number of schools operate under trees or in mud and thatch buildings.

There are 5 health centres, (4 public and 1 mission) and 1 private maternity home; there is no district hospital. Traditional Birth Attendants play a very important role in reproductive health service delivery especially in the remote areas. Attendance per capita increased slightly from 0.22 to 0.24 per capita over the period 2003-20005. This is far lower than the national target of 0.6. The major constraint to utilization of services is geographical access. Only a small proportion of the total population lives within 8km radius of health facilities. Most clients are able to seek health care only on market days when they can have access to transport.

The district has 140 functional boreholes and 23 protected hand-dug wells. Wechiau, enjoys a piped water system. The district has 57.8% coverage of improved water sources. However, only about 5% of the population in the district has access to improved toilet facilities. Currently, the district has about 34 VIPs and household latrines. There are 36 institutional latrines and 3 septic tank latrines in the district. As there is low coverage of sanitation facilities, especially toilets, the major method of human excreta disposal is indiscriminate disposal.

1.9 SCOPE OF STUDY

The study was limited to household practices related only to children under-five. Even though the quality of health care provided outside the home also influences child survival, the study did not asses the quality of care provided by neither the formal nor the informal health system. The household practices were assessed independent of the fact that some, such as vaccinations can only be provided the formal health system.

Chapter 2

2.0 LITERATURE REVIEW

2.1 LITERATURE REVIEW

Based on the proximate determinants model postulated by Mosley and Chen (1984) and using the practices identified by UNICEF/WHO for implementation in the community-integrated management of childhood illness strategy for child survival, and the indicators developed by the Ghana Ministry Health/Ghana Health Service for the 2007-2011 child health strategy for Ghana, this study focused on determining the levels of household practices in the then eight districts of the Upper West Region.

In 1999, based on evidence mainly from observational studies and a few randomized controlled trials which was supported by field experience, UNICEF and WHO described 16 household practices which would be touted as essential for child survival as part of the community-integrated management of childhood illness (C-IMCI) intervention. C-IMCI is the community component of the integrated management of childhood illness (IMCI) strategy and has very strong primary health care foundations; community involvement. The list of the 16 key household practices is provided as Appendix 3. In 2003, The Bellagio Study Group stunned the world, when in a series of publications on child survival (*Lancet* child survival series), the group clearly defined causes of death among children under-5 and proceeded to prescribe 23 interventions that needed to reach universal coverage in order to achieve a two-thirds reduction in the global under-five mortality burden. The list of interventions identified by the Lancet survival series is provided as Table 1.1. Naturally,

member countries of the WHO and UNICEF were expected to adapt these interventions and indicators to meet country-specific needs.

In Ghana, the Ministry of Health/Ghana Health Service has described 18 key household/family practices for child survival (GMoH, 2009). Of these 18 key household/family practices which span aspects of maternal health (pregnancy, delivery), neonatal health (newborn care) and child health (infant and young child feeding practices, preventive and curative practices and health care seeking behaviour), this study measured the top-4 documented to be capable of reducing child mortality by the following proportions: breastfeeding (13%), complementary feeding (6%), insecticide-treated net 97%) and oral rehydration therapy (15%), even in resource-poor settings if delivered at universal coverage. These practices have limited need for health service input or any other external input. The list of household practices identified by the Ghana Health Service as key to child health is provided in Appendix 2. The following literature review was tailored to meet the requirements of measuring the top-4 key household practices in the Upper West Region.

Right at the onset of this study, contacts were made with experts in the field of child survival at the Johns Hopkins Bloomberg School of Public Health; Henry Mosley (co-author of the proximate determinants of child survival in developing countries model), Robert E. Black (co-author of the Lancet child survival series), Jennifer Bryce (another co-author of the renowned Lancet series on child survival), Peter Winch (one of the leading experts on household practices related to child survival), and Cesar G. Victora of the Universidade Federal de Pelotas in Brazil. The idea was to develop a comprehensive plan to

undertake a systematic search of scientific literature; both published and grey. The Reference Manager version 11 (Adept Scientific, UK) was used to create a database into which details of referenced materials were saved for easy access and use.

Besides searching documents and references provided by the above-named experts, the study employed a re-iterative approach to search through literature by using internet sites, databases and the Welch library sources including affiliate libraries to the Welch Medical Library at the johns Hopkins Medical Institutions. Scientific literature included in the review covered those published since 1970. Relevant literature were identified through a systematic search of: major databases (MEDLINE, HINARI, PubMed, POPLINE, CDC, PRB, NIH), websites of international child health agencies (UNICEF, WHO) and their affiliates (CHERG, IMCI Working Group, IGME), websites of international child health NGOs (CORE group, Save the Children, GAVI), websites of other agencies with a mandate related to child health (Countdown Working Group, MEASURE DHS), websites of donor agencies in child health (USAID, DFID, DANIDA, CIDA, BASICS, ACCESS), other websites such as gapminder.com, Johns Hopkins Bloomberg School of Public Health websites of the experts identified at the start of this study and identification of referenced sources cited in publications and documents. The Cochrane, NIH libraries were also searched for additional literature using the terms "child survival," "household practices," "key family practices," "maternal practices in child health," "C-IMCI household practices'" "caregiver practices" "Ghana and child health," "developing countries and child survival" and many others. Documents that included one or more terms related to household child survival practices and one or more terms suggesting child mortality and morbidity were retrieved.

The search identified a total of 1,500 papers of which 500 were retained after screening for relevance of content in terms of the core-4 household practices that were the focus of this study. The publications were then assessed to ensure that they met the inclusion criteria for this study's literature review.

2.2 HOUSEHOLD PRACTICES RELATED TO PREGNANCY, DELIVERY AND NEWBORN CARE

The Ministry of Health/Ghana Health Service recognizes the following practices related to pregnancy, delivery and newborn care as essential for child survival: focused antenatal care (FANC) attendance, tetanus vaccine during pregnancy, intermittent preventive treatment for malaria in pregnancy (IPT_p), skilled attendant at delivery, initiation of breastfeeding within 30 minutes of birth and contact with a trained health provider within two days of delivery (GHS, 2009). Of these six household/family practices, this study captured only one; initiation of breastfeeding with 30 minutes of delivery. The study used the international standard of breastfeeding within an hour of birth.

2.2.1 Breastfeeding is initiated within 30-60 minutes of birth

The benefits of breastfeeding for infant nutrition, development, reduced morbidity and mortality, and prevention of long-term chronic diseases are now widely recognized. In low-resource coupled with high mortality settings, where infection causes a large proportion of newborn deaths, early initiation of exclusive breastfeeding can substantially reduce child mortality; initiation of breastfeeding within the first hour can help prevent neonatal deaths caused by sepsis, pneumonia, and diarrhea and may also prevent

hypothermia-related deaths, especially in preterm and low birthweight infants (Leon-Cava et al., 2002; Edmond et al., 2006; Horta et al., 2007).

Only 39% of newborns in the developing world are put to the breast within one hour of birth, and only 37% of infants under-six months of age are exclusively breastfed (UNICEF, 2009a). In 47 of the 68 priority countries for the countdown to 2015, the median prevalence is 43% with a range of 23% in Guinea-Bissau and Senegal to 78% in Eretria (Countdown Working Group, 2008). The Gambia Multiple Indicator Cluster Survey (2007), reports that, approximately 48% of women who gave birth within the previous two years breastfed their babies within one hour after birth and 90% within one day after birth. Less than half (41%) of all children under-6 months are exclusively breastfed.

In Nigeria, 30% of women with live births start breastfeeding their babies within 1 hour of delivery while 71% start within 1 day of delivery. Early breastfeeding (within 1 hour), is more prevalent in the rural (31%) than in the urban (28%) communities. The positions are reversed when breastfeeding within 1 day of birth is considered; 74% in the urban population as against 69% in the rural population. Age of child since last birth, mother's education and wealth status do not seem too relevant; but the figures are slightly relatively less for mothers of children under 6 months since last birth or for mothers with non-formal or no education (NBS, 2007).

In a C-IMCI baseline survey of 1694 households selected from a master sample of five (5) districts in Malawi, and which aimed to measure household/community knowledge, attitudes, practices and potential constraints to change related to the 16 key household

practices for child survival (UNICEF, 1999), Wansi et al., (2000) report that about 68% of newborns were put to the breast within an hour of delivery, and 95% of mothers continued to feed their infants with breast milk within the first three (3) days.

The Liberia Demographic and Health Survey (LDHS) of 2007 in which data were collected from a nationally representative sample of 7000 women and 6000 men aged 15-49 years, shows that 67% of newborns were out to the breast within one hour of birth. Urban children were slightly less likely to receive breast milk within the first hour of delivery when compared with rural children. Regional differences were recorded; whereas 78% of newborns in North Central region were breastfed within an hour of birth, only 43% of newborns in South Eastern A got similar treatment. Mothers who delivered under the supervision of a TBA were more likely to have initiated breastfeeding within an hour of delivery when compared with mothers who were supervised by a health professional; 72% versus 64%. Maternal level of education did not make any difference while wealth had a mixed influence as the lowest and highest quintiles did not differ but the second and middle quintiles recorded higher levels of breastfeeding initiation within an hour of delivery (LISGIS/MoH and Social Welfare/NACP-Liberia/MI, 2008).

In Ghana, a little over a third of mothers start breastfeeding within one hour of delivery. Data from the 2006 Ghana MICS indicate that, nearly 3 in 4 women in Ghana, breastfeed their newborns within one day of birth. Breastfeeding initiation in Ghana is characterised by regional differentials; the proportion of newborns that are breastfed within one hour of birth ranges from 17% in the Eastern Region to 46% in the Greater Accra region. Newborns in Brong Ahafo are the least likely to be put to the breast within the first day of birth (63%), while Upper East (83%) has the highest. Women with a minimum of secondary school

education are more likely to breastfeed their children within one hour of birth (49%) than women with no formal education (36%). Initiation of breastfeeding within one day of birth increases with mothers' level of education and wealth of household. The practice increases from 67% among newborns of women in the poorest wealth quintile to 79% among newborns of women in the highest quintile (GSS, 2007). The 2008 GDHS reports that for the last-born child ever breastfed, 52% of Ghanaian children were put to the breast within an hour of delivery while 82% were began breastfeeding within the first 24 hours after delivery. There are no differences in the early initiation of breastfeeding by sex but children in urban areas are slightly more likely to benefit from early initiation when compared with their rural compatriots; 55% versus 50% respectively. Delivery by health professionals influenced the early initiation as 56% of newborns delivered by health professionals were put to the breast within one hour after birth whereas only 33% of newborns whose mothers receive no such assistance were breastfed within one hour. Early initiation of breastfeeding is highest in the Upper East Region (68%) and lowest in the Brong Ahafo, Eastern and Northern regions (<50%) (GSS/GHS/ICF Macro, 2009).

2.3 HOUSEHOLD PRACTICES RELATED TO INFANT FEEDING

The key household/family practices related to infant feeding that are promoted by the MOH/GHS include: exclusive breastfeeding for children under 6 months and appropriate breastfeeding and complementary feeding for children aged 6-9 months. This study considered both practices, as together they are documented to contribute to a 19% reduction in U5MR at universal coverage.

2.3.1 Children under 6 months of age are exclusively breastfed

Newborns should be exclusively breastfed for six months. Breast milk provides infants with all the needed nutrients up to six months of age. It provides antibacterial and antiviral agents which protect the infant against disease. It also aids the development of the infant's immune system (Hanson, 2000). However, many mothers stop breastfeeding too soon. There are often pressures to switch to an infant formula, which can contribute to growth faltering and micronutrient malnutrition and is unsafe if clean water is not readily available. The World Fit For Children (WFFC) goal states that, the optimum breastfeeding household practice, is for mothers and caregivers to exclusively breastfeed children for six months and continue breastfeeding for two years of age and beyond, while introducing safe, appropriate and adequate complementary feeding at six months (UNICEF, 2007). Exclusive breastfeeding is essential to prevent stunting. However, a less than adequate proportion of infants are exclusively breastfed for 6 months ostensibly because socio-cultural dispensations appear to overwhelm the benefits of exclusive breastfeeding. Colostrum is disposed off in some cultures and this is actually detrimental to the breastfeeding baby as colostrum is rich in immunoglobulins. Ziyane (1999) notes fewer diarrhoeal episodes among infants who were given colostrum.

The practice of exclusive breastfeeding is rare; using data from 94 countries, the WHO estimates that only a third (35%) of infants aged 0-4 months are exclusively breastfed and rates are as low as 2% in some African countries (WHO, 2001). A meta-analysis of three observational studies in low-income countries (LICs) showed that breastfed infants under two months of age were six times less likely to die of infectious diseases than non-breastfed infants of the same age; those 2-3 months old were 4.1 times less likely to die while those

aged 4-5 months were 2.5 times less likely to die (WHO, 2001). The same analysis reported that breastfeeding was more strongly associated with reductions in diarrhoeal mortality than ARI; breastfed children aged less than six months were 6.1 (CI: 4.1-9.0) times less likely to die of diarrhoea and 2.4 (CI: 1.6-3.1) times less likely to die than their counterparts who not breastfed. Three observational studies were reviewed by Victora et al. (1999) and they determined that decreasing the proportion of infants who were not breastfed by 40%, could potentially avert 3% (range 0.5-7%) of all ARI deaths. A review of 21 breastfeeding studies (nearly all from developed countries) determined that breastfeeding could reduce diarrhoeal mortality by 24-27% among 0-5 month old infants (Feachem & Koblinsky, 1984). Evidence shows that infants (0-5 months) who are not been breastfed, have a seven-fold and a five-fold increased risk of death from diarrhoea and pneumonia respectively, when compared with infants who are exclusively breastfed. Moreover, non-exclusive breastfeeding results in a more than two- to four-fold increase risk of dying from diarrhoea or pneumonia for children under-5 (Black et al., 2003). Betran and others (2001), showed that exclusive breastfeeding for the first three months and partial feeding for the remainder of the year can reduce all-cause infant mortality by 13.9%.

In 2008, in 66 priority countries with available data, the median prevalence of exclusive breastfeeding rate was 28%; ranging from 1% in Djibouti to 88% in Rwanda (Countdown Working Group, 2008). The exclusive breastfeeding (EBF) rates among children under-six months of age, has increased remarkably in many sub-Saharan African countries, over the last 10 years. The EBF rate in developing countries is now nearly 40%. Proper infant feeding practices are important for child survival. Exclusive breastfeeding for the first six months of life has the potential to avert 13% of all under-five deaths in developing

countries, making it the most effective single preventive method of saving children's lives (Jones et al., 2003, Black et al., 2003; Lawn et al., 2005; Bhutta et al., 2008). Timely and appropriate complementary feeding could avert an additional 6% of under-five deaths. Almost 40% of infants in the developing world are exclusively breastfed while 56% of infants aged 6-9 months, receive appropriate complementary feeding. In Rwanda, 88% of infants are exclusively breastfed (UNICEF, 2007).

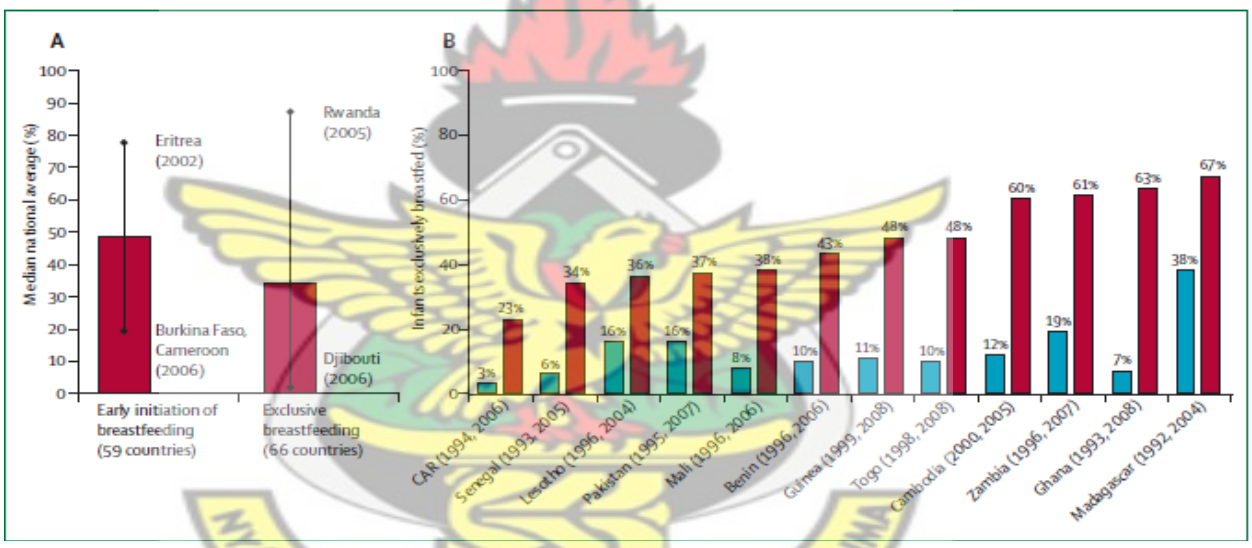


Figure 2.1: Median national coverage for breastfeeding practices in countdown countries and rates in countries with the largest gains since 1990

A= median national coverage in countdown countries (data are most recent estimates since 2000)

B= Percentage of infants under-6 months who were exclusively breastfed in selected countries with the highest rates of increase since 1990

Source: UNICEF, 2009 as cited in Bhutta et al., 2010

Data from southern Tanzania show that, exclusive breastfeeding was nearly twice as common among children from the poorest households when compared with the least poor (Armstrong Schllenberg, 2008). Mothers in Nigeria exclusively breastfeed less than 12% of children aged 0-5 months. The children with mothers who have no formal education or have non-formal education are worse off; only 8% and 3% respectively of such children are exclusively breastfed (NBS, 2007). Data from the C-IMCI Baseline Survey of 2000 in Malawi show that only 25% of children 0-6 months are exclusively breastfed while 16-50% of infants are given other foods before three (3) months. Age at introduction to other foods was as early as 1 month in some instances. Women with at least secondary school education were more likely to exclusively breastfeed their infants for the first six (6) months of life (Wansi et al., 2000). The LDHS 2007 reports that 38% of children under-2 months are exclusively breastfed while only 18.8% of children aged 4-5 months receive the same treatment. Median duration of exclusive breastfeeding for children born in the three months (3) preceding the survey did not vary much by region, maternal education or wealth (LISGIS/MoH and Social Welfare/NACP-Liberia/MI, 2008).

In Ghana, 54% of children aged less than six months are exclusively breastfed, and the percentage is higher (65%) for children 0-3 months. Boys are slightly more likely to be exclusively breastfed than girls (GSS, 2007). The 2008 GDHS reports that even though the duration of breastfeeding among Ghanaian children is long, exclusive breastfeeding is short; 84% of children under-2 months of age are exclusively breastfed and this figure is almost halved by 4-5 months of age (49%). Overall, 63% of Ghanaian children are exclusively breastfed (GSS/GHS/ICF Macro, 2009).

2.3.2 Children aged 6-9 months receive appropriate breastfeeding and complementary feeding

Infants aged 6-8 months are considered to be adequately fed if they are receiving breast milk and complementary food at least two times per day, while infants aged 9-11 months are considered to be adequately fed if they are receiving breast milk and eating complementary food at least three times a day. Starting at six months of age, infants should be fed freshly prepared energy- and nutrient-rich complementary foods in addition to breastmilk till the age of two years. Infant and young child malnutrition is a common problem in many countries. Some estimates state that more than 33% of young children are stunted, with height-for-age below -2 standard deviations (SD) with respect to international growth curves (UNICEF, 2001). Improved complementary feeding for infants and young children can reduce deaths from diarrhoea and pneumonia by more than 10%. It will in addition, reduce malnutrition by 20% and increase resistance to measles and other childhood diseases (Interagency Working Group on Community-IMCI, 2005). Malnutrition is reported to be associated with more than half (54%) of the deaths in children under-five (Pelletier, Frongillo & Habicht 1993; WHO, 2002; Bryce et al., 2003, WHO, 2005).

Among the 63 countries with coverage data available for 2008 Countdown report, the median prevalence of complementary feeding from six to nine months was 62%, with a range from 10 to 91%. Ten (10) countries reported rates of 80% or more (Tanzania 91%, Malawi 89%, Burundi 88%, Haiti and Zambia 87%, Kenya 84%, Cambodia 82%, Peru 81%, Mozambique and Uganda 80%). Three countries, Somalia (15%), Tajikistan (15%) and Laos (10%) reported prevalence rates lower than 20% (Countdown Working Group, 2008).

In the Gambia, 44% of the children aged 6-9 months receive breast milk and solid or semi-solid foods. By age 12-15 months, 92% are still being breastfed and by age 20-23 months the figure drops to 53%. Girls are more likely to be exclusively breastfed than boys. Thirty-nine percent (39%) of children aged 6-11 months are adequately and appropriately fed. A higher proportion of infants aged 6-8 months from the urban areas were found to be receiving breast milk and complementary food at least twice a day. Mothers with secondary education are more likely to feed their infants appropriately (GBoS, 2007). Only one third (31%) of Nigerian infants aged 6-9 months are adequately fed and one fifth (22%) of infants aged 9-11 months receive breast milk and complementary food at least 3 times a day. There is some northward decline in these proportions but the urban-rural differential is less impressive while mother's education and wealth status are positively related to adequate child feeding (NBS, 2007). According to the LDHS 2007, among children aged 6-23 months, only one-in four (25%) was appropriately fed using the infant and young child feeding (IYCF) practices. Those more likely to be fed appropriately were those in South Eastern A region ad Monrovia, those whose mothers were better educated, and those from wealthier homes (LISGIS/MoH and Social Welfare/NACP-Liberia/MI, 2008).

In Ghana, 54% of infants aged 0-5 months and 9-11 months respectively are considered adequately fed. Compared to these age groups, only 50% of children aged 6-11 months are being adequately fed. Overall, 52% of children aged 0-11 months are appropriately fed based on the age-specific feeding recommendations. With regard to background characteristics of mother, those with middle school/Junior High School education are more likely to feed their children adequately compared to other groups. Among children aged 6-9 months, 59% still receive breast milk alongside solid or semi-solid foods. At 12-15 months

of age, 95% of children are still being breastfed. The proportion decreases to 56% by age 20-23 months. By the end of the sixth month, the percentage of children exclusively breastfed is below 12%. Only about 20% of children receive breast milk after 2 years (GSS, 2007).

2.4 HOUSEHOLD PRACTICES RELATED TO DISEASE PREVENTION IN CHILDREN UNDER-FIVE

2.4.1 Children sleep under an insecticide treated mosquito net

Worldwide nearly 900,000 children die from malaria; sleeping under an insecticide treated bednet will reduce the deaths by 23% (WHO, 2002a; Interagency Working Group on Community-IMCI, 2005). Malaria is a huge public health and development problem; it causes almost one million deaths a year among children under-five (WHO, 2002b) 90% of them in Africa. This translates into 9% of all childhood mortality and 20% of deaths in Africa (WHO, 1994; WHO 2002b). A meta-analysis of four randomized controlled trials in Africa demonstrated that, insecticide-treated bed nets (ITBNs) are associated with a 17% reduction in child mortality (Lengeler, 2004). Browne et al (2001) found similar results of 17% reduction in child mortality with use of insecticide-treated nets in a randomized control trial in the Northern region of Ghana. Insecticide-treated bed nets are considered the most efficacious and currently available preventive intervention in malaria control (Whitty et al., 2002), unfortunately, not enough children sleep under nets in Africa; Bryce et al., (2003) noted that fewer than 5% of children in several malaria-endemic regions of Africa were using ITNs.

Data on sleeping under insecticide-treated nets in 45 Countdown countries show a median coverage of 7%, with a range of 0% in Guinea, Madagascar and The Sudan to 49% in The Gambia. Some national programme efforts may not have been as yet captured in these estimates. Countdown countries such as Kenya, Ethiopia and Ghana are reported to have distributed millions of ITNs since coverage data were last collected in 2005 and 2003, for Ethiopia and, for Kenya and Ghana respectively (UNICEF & Roll Back Malaria, 2007).

Sleeping under mosquito nets is reported in 30% of children in southern Tanzania but most of the nets were not ITNs. Only one-in-ten children (11%), used a net that had ever been treated with an insecticide. Mosquito net usage, for both treated and untreated nets, was 70-80% lower in the poorest households compared with the least poor (Armstrong Schellenberg et al., 2008).

Very few Nigerian children (4%), under-five slept under any mosquito net the night prior to the 2007 MICS, only slight gender disparities in favour of the females in ITN use among children under-five were recorded. Children in urban areas are twice as likely to sleep under mosquito nets as their rural counterparts (6% versus 3%); the figure is higher in the South than in the North. The proportion of children under-five sleeping under ITNs are fractions less than proportion of those sleeping under any net at all and the relative trends are quite similar across levels of associated factors. Out of these, 59% reported having at least one mosquito net and 50% had at least one insecticide treated net (NBS, 2007).

In The Gambia, households in Banjul have the lowest proportion of ITNs (29%) while 76% of households in Mansakonko have an ITN. Compared with households in the urban communities, households in the rural communities were nearly twice (64% versus 31%)

more likely to use ITNs. Sixty-three per cent (63%) of mothers or caregivers reported that the children under-five slept under a bed net the night prior to the 2007 MICS and of this, 49% were reported to have slept under an ITN. Gender did not have any influence on sleeping under a bed net (GBoS, 2007). Overall, one third (30%) of households in Liberia have at least one mosquito net (treated or untreated), and 10% have more than one. There is little difference in urban versus rural in net ownership but the wealthiest households are almost twice as likely to own a mosquito net compared with the poorest households (42% versus 22%) (LISGIS/MoH and Social Welfare/NACP-Liberia/MI, 2008).

Almost a third (30%), of Ghanaian households have at least one mosquito net and nearly 1-in-5 (19%) has at least one ITN. More rural than urban communities, were likely to possess an ITN; possession in rural communities was higher by 15%. Regionally, Upper East and West regions were on the high side while the Western region was at the bottom of the table. Although ownership of ITNs is higher in households with better educated household heads, wealth quintile differences were not substantial. In the Upper West region, 32% of households own at least one ITN (GSS, 2007). A third, (33%) of Ghanaian children under-five slept under any mosquito net the night prior to the 2006 MICS, and 22% slept under an ITN. The use of bednets among children under-five declines steadily with age. There are no clear gender disparities in bednet and ITN use among children under-five. The prevalence of ITN use by children under-five in Upper West region is 37% (GSS, 2007).

2.5 HOUSEHOLD PRACTICES RELATED TO THE HOME MANAGEMENT OF COMMON CHILDHOOD ILLNESSES

2.5.1 Children with diarrhoea receive ORS and or appropriate home fluids and Zinc tablets

Four out of ten (40%) global deaths due to diarrhoea occur in Africa. Access to clean water and sanitation are the most widely tested environmental health indicators and they impact directly on diarrhoea (Boadi & Kuttenem, 2005; Franz & Fitzroy, 2006), and 88% of deaths from diarrhoea can be traced to unsafe water, inadequacy of water for hygiene and lack of access to sanitation (Black et al., 2003). Childhood diarrhoeal diseases often relate to unsafe and contaminated water and kill more than 2 million children under-five years of age each year (Cancross, 2003) making it the second most common cause of child death worldwide (UNICEF, 2007). Around one third of children with diarrhoea diseases in the developing world receive the recommended treatment, children living in rural communities and the poorest households are less likely to receive the recommended treatment for diarrhoeal diseases (UNICEF, 2007).

Based on data collected on children under-3 years in 52 developing countries in surveys conducted between 1996 and 2002 Stallings reports a prevalence of diarrhoea among children under-3 on the average of about 20% in sub-Saharan Africa, North Africa/West Asia/Europe, and Latin America/Caribbean, 16% in South/Southeast Asia, and 11% in Central Asia. Generally, diarrhoea is more prevalent among rural children than urban children. When viewed by six-month age groups, diarrhoea is highest for children aged 6-17 months; this is consistent with the introduction of weaning foods during the complementary feeding period. With the exception of children in Central Asia, children living in households in the highest quintile of the wealth index distribution are consistently

less likely to have had a recent diarrhoeal episode than children in households in the lowest two quintiles. This finding is true for both urban and rural children (Stallings, 2004).

Children of mothers who have more years of formal education are less likely to have had diarrhoea recently than children of women with lower levels of formal education. While this association is true for both urban and rural children, it is somewhat stronger for urban children. Perhaps, in rural areas, the greater lack of safe drinking water and adequate sanitary facilities diminishes the influence of mother's level of formal education on diarrhea. Overall, the prevalence of diarrhea in urban areas does not differ markedly by access to safe drinking water except in sub-Saharan Africa. Likewise, there is no consistent association between diarrhea prevalence and safe drinking water in rural areas. In a number of countries in North Africa/West Asia/Europe, Central Asia, and Latin America/Caribbean, modest to strong differences in diarrhoea prevalence are related to mother's age; children of women aged 35 years or more, are less likely than children of women aged less than 20 years to have had diarrhoea recently. Diarrhoea prevalence is not noticeably influenced by increments in birth intervals or birth order, or by child's sex. The association between nutritional status (defined by three nutritional indices) and diarrhoea prevalence is strong and generally consistent; better nourished children are less likely to have had a recent bout of diarrhoea episode than children who are less well nourished. Central Asia is the exception to this pattern. It is probable that in Central Asia, the nearly universal access to adequate sanitation facilities and the more temperate climate reduce the influence of nutritional status on diarrhea in that region (Stallings 2004).

Uncomplicated diarrhoea can be managed at home. The World Fit for Children (WFFC) calls for a reduction in the 2000 incidence of diarrhoea by 25%. Home management of childhood illness is common. UNICEF estimates that in 2000, 69% of diarrhoea cases were treated with oral re-hydration therapies (oral rehydration salts and or recommended home fluids such as cereal-based fluids). Oral rehydration therapy (ORT) can prevent death from watery diarrhoea in all but the most severe cases (UNICEF, 1999a).

World Fit for Children targeted by 2005, to reduce by one half, deaths due to diarrhoea among children under-five. For more than two decades, oral rehydration therapy (ORT) has been the cornerstone of treatment programmes for childhood diarrhoeal diseases. Recommendations on its use have changed over time, however, and there is thus a relative lack of comparable treatment data from the early to mid-1990s. Though limited, the data indicate that coverage of treatment for children under-five appears to have improved significantly across the developing world (excluding China) over the past decade, including many parts of sub-Saharan Africa. But coverage still remains too low. Measures to prevent childhood diarrhoeal episodes include promoting exclusive breastfeeding, raising vitamin A supplementation rates, improving hygiene, increasing the use of improved sources of drinking water and sanitation facilities, promoting zinc intake and immunizing against rotavirus (UNICEF, 2007).

DHS data for 53 developing countries for the period 1996-2002 show that recommended homemade fluids (RHF) were used considerably less than ORS to treat diarrhea. Among children who were taken to a health provider, the mean proportion given RHF ranged from 11 to 33% by region. Among children not taken to a health provider, RHF use was less; 7 to

24% by region. There was a strong and consistent difference in the use of oral rehydration solutions (either ORS or RHF) by careseeking behavior. Children taken to a health provider are more likely to have been given a solution at some time during the diarrheal episode. While it may be the case that health providers were likely to have had ORS on hand and correctly administered it to treat dehydration, it may also have been the case that women who initiated ORS or RHF use at home were more likely than other women to subsequently take their sick children to a health provider. The mean proportion of sick children offered more fluids ranged by region from 48 to 72% among children taken to a health provider and from 37 to 60% among children not taken for care outside the home. Among sick children taken to a health provider, the mean proportion offered about the same or more food than usual ranged from 24 to 44% by region. In nearly every country, continued feeding was reported less often than increasing fluids for children taken for care. On average, among sick children not taken for care, the proportion continued to be offered about the same or more food ranged from 38 to 46% by region Sick children who were taken to a health provider were more likely to be offered more fluids than children not taken for care. The opposite association was found with respect to continued feeding: children with diarrhea who were taken to a health provider were less likely to be offered about the same or more food than usual than children not taken for care outside the home. One explanation for this negative association may be that a mother's decision to seek care outside the home was triggered by a sharp drop in appetite and refusal to eat (Stallings, 2004).

A great number of studies have shown a strong association between using glucose and cereal-based oral rehydration salt (ORS) solutions and, reducing hospital admissions for rehydration and mortality (Santosham et al., 1982; Ryder, Reeves & Sack, 1985; Gore,

Fontaine & Pierce, 1992). Other home-based fluids for ORT have also been shown to be effective (Kassaye, Larson & Carlson, 1994). In Brazil, ORT has been estimated to have contributed to a 79% decrease in diarrhoea-related deaths (Victora et al., 2000). An impact review of large-scale ORT programmes on diarrhoea-related deaths in children in the Philippines, Egypt, Mexico and Brazil concluded that promotional activities and the increased use of ORT are likely to have influenced to a large extent the global reduction of diarrhoeal deaths from 4.6 to 1.5 million between 1908 and 1999. In the countdown countries, among children under-five with diarrhoea, the median proportion receiving oral rehydration therapy (or increased fluids) with continued feeding is 38% (range: 7% in Botswana and Somalia to 76% in the Philippines). The results are similar to those for diarrhoea and pneumonia treatment, with a median of 40% across the 34 countries with available data (Countdown Working Group, 2008).

The 2007 Nigeria MICS reports that, one-in-ten of children under-five had diarrhoea in the two weeks preceding the survey. Prevalence rates are higher in the rural than in the urban communities, higher in the North than in the South and lower in the young children (0-6 months) than among the older ones. The sex of child, rural-urban and north-south differentials, and age of child are not important factors in the home management of diarrhoea. However mother's education and wealth status are relevant; children of mothers with secondary education or higher and those in the richest wealth quintile are the most likely to use oral rehydration therapy (ORT) in the home management of diarrhoea.

Overall, 17% of under-five children had diarrhea in the two weeks preceding the Lesotho 2000 MICS. Diarrhea prevalence was significantly higher in the Mountain region at 26% than in other regions. The peak of diarrhea prevalence occurs in the weaning period, among

children aged 6-23 months. Ninety-five percent (95%) of children with diarrhoea received one or more of the recommended home treatments (that is, were treated with ORS or RHF). Only 9.9% of children with diarrhoea received increased fluids and continued feeding. Nineteen percent (19%) of children under-five, who had diarrhoea, drank more than usual while 76% drank the same or less. Thirty-five percent ate somewhat less, the same, or more than usual while 61% percent ate much less than usual or none. Children from the poorest families are likely to have had a bout of diarrhoea (Daniels et al., 1999) in the two weeks prior to the survey. In the Gambia, 29% of diarrhoeal cases are properly managed at home. There are marked differences in the home management of diarrhoea by background characteristics. Basse Local Government Area (LGA) had the highest home management rate of 49% while Mansakonko had the lowest rate (12%) (GBoS, 2007).

Fewer than two children out of every five (15%), children under-five years had diarrhoea in the two weeks preceding the 2006 MICS in Ghana. Diarrhoea prevalence was lower in the southern part of Ghana with Volta region recording the lowest rate of 9%. The peak of diarrhoea prevalence occurs in the weaning period, among children aged 6-23 months. Nearly 29% received ORT with ORS or increased fluids and continued feeding; 9% received recommended homemade fluids. Children of mothers with at least a secondary school education are more likely to receive oral rehydration therapy than other children. As many as 63% of children with diarrhoea did not receive ORS or recommended home-made fluids (RHFs). Twenty-nine percent (29%) of children either received ORT or increased fluid intake, and at the same time, followed the recommendation for continued feeding. Nineteen percent (19%), of children with diarrhoea were managed at home. There are significant differences in the home management of diarrhoea by background characteristics.

Infants under-12 months are less likely to be managed at home; 9% when compared with those aged 24-35 months (31%). In the Upper West Region, 19%of children under-five had diarrhoea in the two weeks preceding the Ghana MICS 2006. The sample size of children was too small to make meaningful analysis in terms of ORT (GSS, 2007).

2.5.2 Socio-economic status and other contextual issues related to inequity.

In an analysis of under-five mortality rate trends in sub-Saharan Africa from 1960 to 2000, Amouzou & Hill (2004) showed that a unit increase in the logarithm of per capita income is significantly associated with a 25% reduction in under-five mortality. Paternal employment in non-manual work is thought to favour child survival (Madise et al., 1995).

Mothers with low-level of education or none at all are less likely to recognize danger signs in sick children, less likely to comply with health instructions and less likely to be able to provide holistic care for their children. Nguyen-Dinh and Feeny (1999) indicate that child mortality is significantly higher for children born to mothers with no formal education. In a study in Uganda, child mortality decreased by 4% and 6% for every year of education attained by mothers and fathers respectively (Kaharuza, Sabroe & Scheutz, 2001). Madise & Diamond (1995) state that maternal education of nine or more years is favourable for child survival. Amouzou and Hill (2004), in their study, found that a 10-percentage point decrease in the proportion of non-literate women decreases under-five mortality by 10%. In contrast, Binka et al (1995) in a case-control study to assess risk factors for child mortality in Northern Ghana, did not find any association between parental education and risk of mortality.

Key distal determinants of inequities in child health at national levels include economic, educational and gender inequities, and the lack of protective legislation for mothers and children. Mosley and Chen (1984) divided the determinants of child health and survival in developing countries into proximate factors - which are directly responsible for the health problems - and underlying factors - which affect the child indirectly through their effect on the proximate causes. Some of the underlying factors are: the socioeconomic variables, usually evaluated through family income, parental education and family assets, and access to health services. Victora and others (2003), and Wagstaff and others (2004) have looked at the factors that contribute to inequities in the health of children in low- and middle-income countries. Admittedly though asset indices present some limitations - different choices of assets used in a given index can make changes to the classification of families (Filmer & Prichett, 2001). In many countries, those in the wealthiest quintile tend to reside in urban areas, particularly in the capital city or regional capitals or district capitals so that wealth inequities are closely associated with urban/rural disparities, and the poorest quintile in a middle-income country/community, may be better off than one of the wealthier quintiles in a very low-income country/community, so that only relative differences are being studied. Additionally, asset quintiles do not fully address inequities conferred by age, gender, ethnic group or position within the household family structure (WHO, 2007). These limitations, however, do not rule out the use of asset indices for documenting the wide gaps between rich and poor that exist in most low- and middle-income countries.

In all regions of the world, there is a close association between wealth and parental education - the percentage of women with five years or more of education was close to 80% for the wealthiest compared to about 30% for the poorest quintile; for men, the

corresponding figures were about 85% and 45% respectively (Barros et al., 2010). Consistent patterns were observed within each region. Improvements in parental education are said to account for part of the progress in child survival in past decades (Cleland, Bicego & Fegan, 1992). Several studies also show that maternal education is strongly associated with child health (Cleland & Ginneken, 1988). The level of education of a mother/caregiver may influence her child's survival through several pathways: the ability of the mother to contribute to the family/household income, to reinforce her authority and make decisions in the family/household, to make better use of existing services, and to provide better childcare including health seeking behaviour (UNDP, 2006). Maternal involvement in household decision-making, commonly observed with maternal education, augurs well for child survival. This is especially necessary in deciding to seek health care for a sick child. When men do not play the role expected in child and reproductive health in the household, we can predict higher levels of mortality in such households because the pathways to child survival all emphasize the role of the household in the reduction of morbidity and mortality among children.

There are direct associations between adequate clean water and sanitation and socioeconomic indicators such as maternal education (Gyimah, 2003) and family income (Barros et al., 2008). Many Multi-indicator Cluster Surveys provide data to support this assertion (Barros et al., 2010).

Handwashing prior to food preparation and feeding of children is a strong predictor of diarrhoea prevalence in children. Some DHS provide information on handwashing prior to food preparation. MEASURE DHS (2009) reports that in 12 countries, nine or more out of

ten informants reported that they washed their hands prior to food preparation in all asset quintiles; are these social desirability responses? Numerous surveys report that other diarrhoea-related practices, such as safe disposal of child fecal matter, tend to be more frequent among the rich compared with the poor. The number of children under-five within a household can be expected to influence household practices related to child survival; the poor are more likely to have greater numbers of children under-five per household (Barros et al., 2010).

Exclusive breastfeeding is known to reduce both the incidence and severity of infectious diseases, such as diarrhoea. With the exception of sub-Saharan Africa, where the frequency of exclusive breastfeeding does not show an association with wealth, in all other regions this practice is more common among the poor than among the rich (Gwatkin et al., 2007). Regarding timely and appropriate complementary feeding (breastfeeding plus complementary foods among children aged 6–8 months) the picture is not consistent. In countries where breastfeeding at age 6–8 months is nearly universal, appropriate complementary feeding tends to be more prevalent among the rich. In regions where breastfeeding duration is short, children from wealthy families are taken off the breast earlier and do not comply with the timely complementary feeding recommendations (Gwatkin, et al., 2007). These analyses may confirm earlier observations that breastfeeding may be the only beneficial household preventive practice that is generally more prevalent among the poor than the rich (Trussell et al., 1992). The exception to this pattern is seen in sub-Saharan Africa, where there are no clear socioeconomic differentials (Barros et al., 2010). Early initiation of breastfeeding is an important behaviour. Both DHS and MICS provide information on the prevalence of diarrhoea, acute respiratory infections and fever in

the two weeks preceding the survey. In the great majority of DHS and MICS, caregivers of poor children reported that diarrhoea prevalence was 30% or more above the rate in the top quintile (Gwatkin et al., 2007).

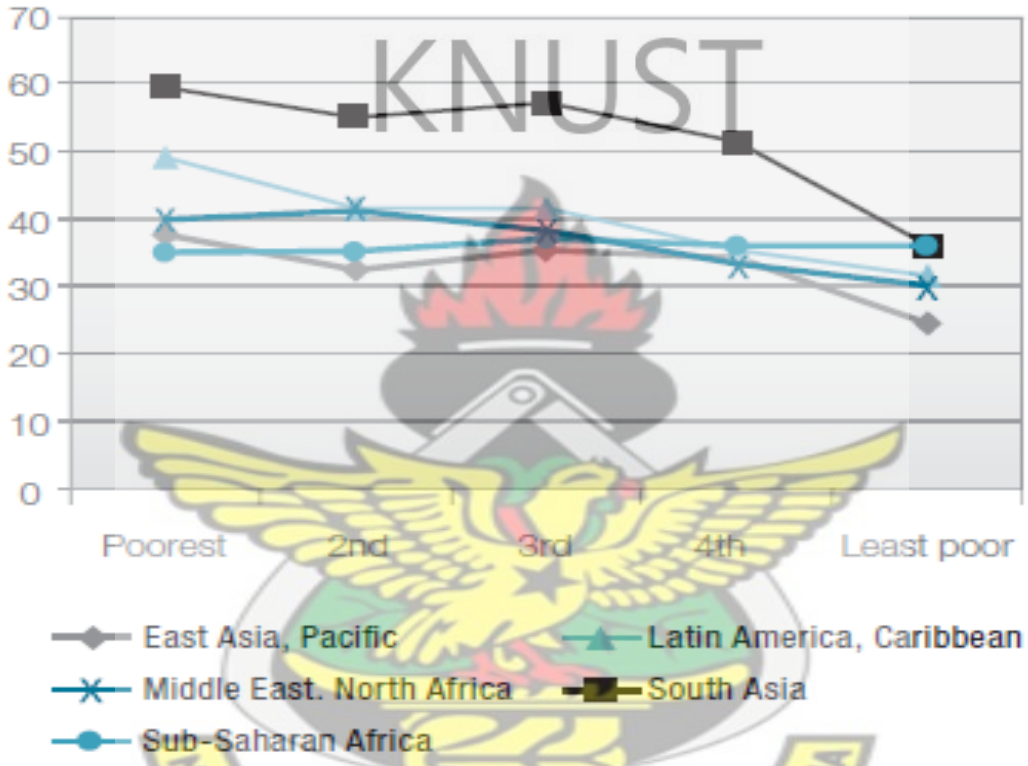


Figure 2.2: Prevalence of exclusive breastfeeding rates in children 0-3 months by wealth quintile and region of the world

Source: Gwatkin et al., 2007

The standard equity analyses of DHS do not include exclusive breastfeeding by maternal education, but tabulations by maternal education are available for Benin, where the highly educated are more likely to practice early initiation (Institut National de la Statistique et de l'Analyse Economique/ORC Macro, 2001) and in Brazil, where the opposite trend is

observed (Sociedede Civil de Bem-Estar Familiar/ORC Macro, 1996) Even though appropriate breastfeeding practices tend to be more frequent among the poor than the rich worldwide, in low- and middle-income countries, fewer than half of the poorest children are exclusively breastfed (Barros et al., 2010).

Insecticide-treated mosquito nets are the main preventive measure against malaria. DHS results from 18 countries show that overall net use by children (not necessarily insecticide-treated) is more common among the rich than the poor in 13 countries. Information on whether the child slept under a treated net, available from 21 MICS, shows that equity gaps seem to be bigger for treated nets than for any bed net use (Gwatkin et al., 2007).

Data on oral rehydration therapy during diarrhoea are available for several DHS and MICS. DHS results are consistent for all regions of the world, with higher use among the least poor, a pattern that is also evident in 17 of the 26 MICS. DHS data also show that care seeking for diarrhoea from a health facility was clearly higher for children from wealthier families (Gwatkin et al. 2007).

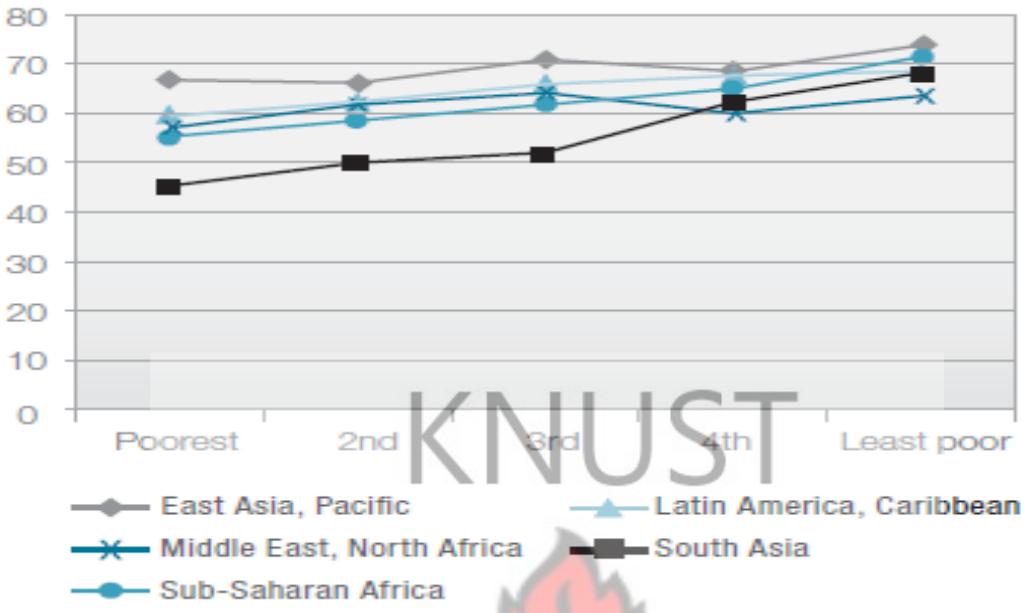


Figure 2.3: Oral rehydration therapy during diarrhoea in children under-five by wealth quintile and region of the world

Source: Gwatkin et al., 2007

In the 68 priority countries the campaign-driven interventions (immunization and immunization-based) are the interventions that reach more than 1-in-2 children. An intervention such exclusive breastfeeding, documented to be capable of reducing under-five mortality by 13% at universal coverage and which is a household practice, unfortunately has 34% coverage. (Figure 2.3)

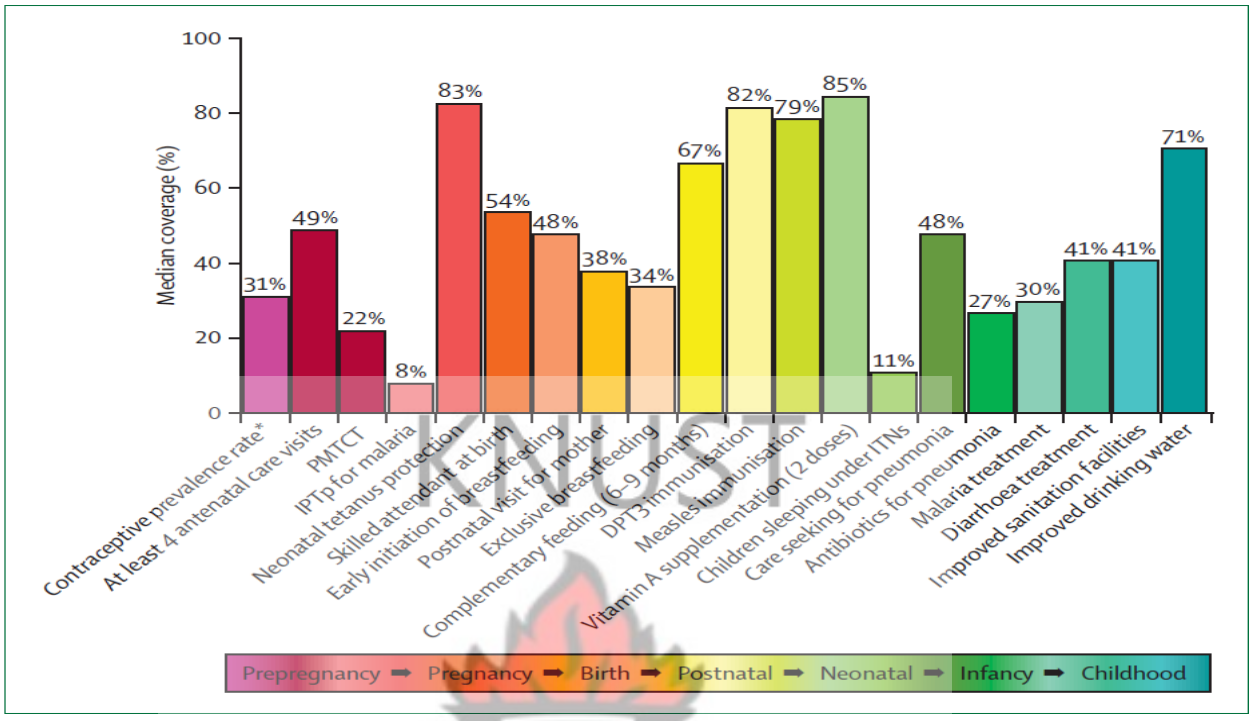


Figure 2.4: Median coverage for effective maternal, neonatal and child interventions in 68 countdown countries
Source: Bhutta et al., 2010

The limitation with most of the studies referred to in the literature review is that, the data come from national surveys and do not provide information on lower levels such as the district level. By tenets of primary health care, the district level is the 'health action' level; the level at which primary health care brings the greatest benefits to communities. Data from the district level are important as they provide evidence-base for district-specific interventions to improve child health.

Chapter 3

3.0 METHODOLOGY

3.1 INTRODUCTION

This chapter gives an account of the study methods, design and steps taken by the survey. The methodology a study uses is important as it reflects on the quality of the data collected, findings and interpretation of the data. The chapter details the study tools and techniques employed for data collection. The study population, and how the study sample was selected are also described and details of study variables and their definitions are also provided. Data handling is important for data quality and ethical reasons; this chapter captures data handling and analysis. The weaknesses and limitations of the study design are acknowledged in this chapter.

3.2 RESEARCH METHODS AND DESIGN

The study was a community-based observational study that used a cross-sectional design with a quantitative approach in a representative cluster sample of households from the then eight districts of the Upper West region in June-November, 2008. In preparation for the study, I undertook a field visit to the Upper West region in June 2008. The main objectives of the visit were to achieve the following:

- Meet with a variety of organizations and individuals within the Upper West region to understand local norms and practices regarding health survey delivery. Meetings were arranged with the Regional and District Health administrations and various women's groups in Wa, the capital town of the region.
- Discussion of community entry and community sensitization strategies prior to the Survey.

- Understand the support structures the region can provide to the survey.
- Undertake visits to some potential study communities to understand logistic and community-related barriers.
- Discussion of administrative clearance at the political level

Four weeks (July, 2008), were devoted to sensitization within the communities that were planned for sampling. The sensitization activities were aimed at engaging the communities and explaining the objectives of the study, the selection methodology, daily activities during the survey period, what the communities could expect and finally what the survey was not about. Market place and community meetings were used to engage the communities and to answer questions they had. The voluntary nature of the study, its non-binding status and its commitment to confidentiality were emphasized at every opportunity. Communities were informed that the results of the survey would be reported at a district level, not at the community or individual level. The communities expressed interest in the survey. They recognized the fact that the morbidity and mortality burden was particularly heavy in the children under-five and the previous steps undertaken to reduce the burden appeared to be ineffective after initial successes. The mothers were willing to do anything to save the lives of their children. As one mother put it '*I am willing to give my life in exchange for that of my child, when she is ill I get very frightened.'* (A 35-year old mother of a girl child aged 2 years, Han – Nadowli District).

Finally, a participant information leaflet was shared with the various communities. The study lasted six months starting with preparations in June 2008. Data collection started at

the beginning of September and lasted for about seven weeks, concurrent with data entry. Provision was made for travel distances between study communities and other contingencies such as funerals and floods that rendered pathways and roads unusable. In any such case, the affected data collection team first covered another area and returned to the affected area at a later date. A few such cases occurred during data collection. (Appendix 4)

Field data collectors have an extremely important role in surveys as they are the first point of contact between the survey and the community during the interview process. In the selection of field data collectors, the survey took cognizance of the following; ability to read and write English, ability to speak the relevant local language fluently, ability to ride a motor bicycle and previous experience with surveys. Out of 60 applicants, 40 were selected and trained. The survey required a total of 32 field data collectors; the extra eight were trained so that they could step-in if any of the initially selected field workers was unable to continue the fieldwork.

A 5-day training workshop was held for the research team made of the principal investigator, the data manager, the statistician, the field coordinator, (8) data entry clerks, eight (8) field supervisors, 40 field data collectors and four (4) drivers. The Multiple-Indicator Cluster Survey Manual 2005 developed by UNICEF was adapted and used as reference material for the training and preparation for the survey. Each field assistant was trained to collect primary data from five (5) households a day for fifteen (15) days. The field assistants worked in pairs for any two to be able to provide guidance and support to each other. This means that a pair of field assistants spent a day in each selected community

to interview ten (10) mothers/caregivers in ten (10) households. Each pair of field assistants covered fifteen (15) communities per district. At the end of the training session for field staff, all members of the Survey management team (principal investigator, field supervisors, field coordinator and data manager), had copies of a master survey control form that gave details of the communities to be studied, the dates for the data collection and the data collectors scheduled for the activity, to facilitate follow up and monitoring in the field. Details of training content are provided as Appendix 5.

3.3 DATA COLLECTION TECHNIQUES AND TOOLS

A comprehensive questionnaire was developed for the survey. The questionnaire was designed to collect information on 18 household practices related to: pregnancy, delivery and newborn care, infant feeding, prevention of illness in children under-5, management of common childhood illness, child development and contraceptive use. In addition, data were collected on demographic characteristics, socio-economic status and sickness episodes among children under-five. The content of the questionnaire was based mainly on the model questionnaires developed for the multiple-indicator cluster survey (MICS) by UNICEF and partially on the MEASURE DHS tool used to conduct the 2008 GDHS. The rationale for this choice is the possibility of comparing results of the current study with similar data available at the regional and country levels but the tool had slight adaptations so as not to simply validate the data collected by the MICS.

The generic questionnaire proposed by UNICEF/WHO to capture data on household practices for child survival originally covers 12 key practices. The African region added four other practices in the areas of child injury, men's participation in children care and

reproductive health, HIV/AIDS and child abuse. The Ghana Ministry of Health/Ghana Health Service (GHS) also modified and increased the number of household practices to 18, to meet the requirements for children in Ghana. A questionnaire that had been used in a similar survey in Malawi and Tanzania (for the multi-country evaluation of IMCI) was also reviewed. Once the draft version of the questionnaires was finalized in terms of content it was validated by the data managers at Kwame Nkrumah University of Science and Technology-School of Medical Sciences (KNUST-SMS) to ensure the data sets were well laid out.

The data collection tool was a 29-page document comprising modules for which data were collected for each qualifying child living in the household, and modules dealing with individuals (mother, father, sick child) or the family's handling of sanitation, child injuries and finally, a psychosocial module. There were 215 questions and more than 400 data entry points. Household codes were registered on each single sheet in case the questionnaire fell apart. The binding of the document was solid enough to minimise any chance of the document falling apart during handling. Each interview lasted about one hour forty-five minutes depending on the age, level of education of the respondent, privacy conditions within the household and the number of interruptions during the interview. A slight decrease was observed over time. The final questionnaire is provided as Appendix 1.

Data were collected through interview, direct observation, and review of children and mothers' health records using a structured modular questionnaire. Cooking salt found in the households was tested for the presence of iodine using a test kit provided by UNICEF. Besides looking for BCG scars, there was no physical examination and no biological

specimen was collected from the study participants. Direct observation was used to assess mother/caregiver knowledge related to ORS preparation, conditions for storing drinking water, and the type of latrines used by households.

For any randomly selected household that consented to participate in the study, the questionnaire was used to list the head of the household, and a mother and her children under-5. Information was collected on the characteristics of the mother included; age, level of education and number of children under-five. Information was collected differently for the head of the household if the mother was not the head of household. Information on household socio-economic indicators was also collected. One woman per household, who had at least one child under-five, was randomly selected to partake in the person-to-person interviews using the study questionnaire.

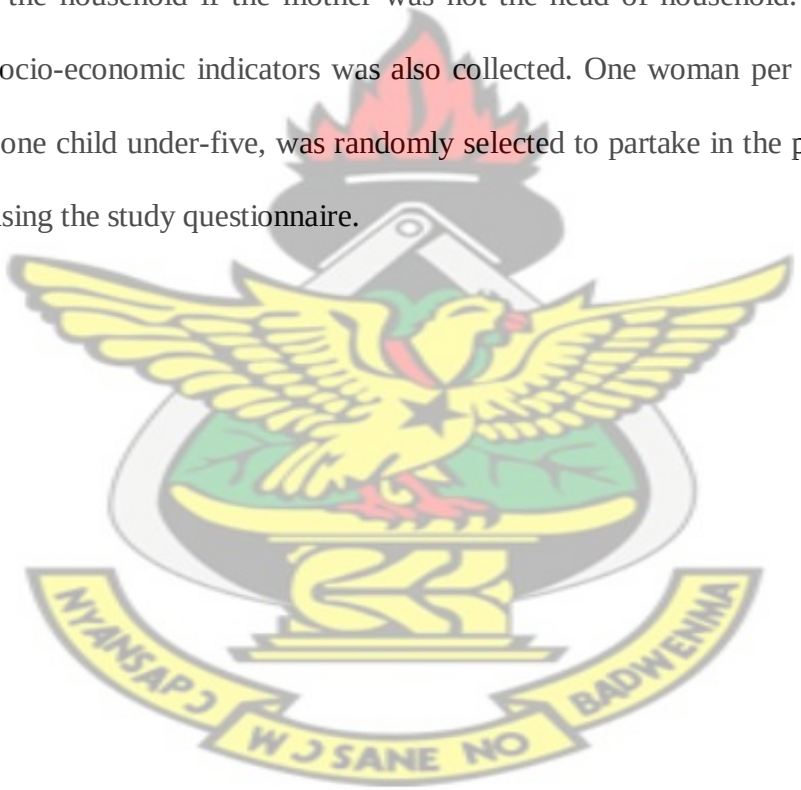


Table 3.1: Survey topics

Section	Topic	Respondent
Identification	Household identification	Household head
Language	Language	Household head
Religion	Religion	Household head
Household listing	Level of education, age, number of children under-five	Household head/ Selected mother
SE	Household socioeconomic status	Household head
Ill	Child sickness episodes	Selected mother
HS	Health care seeking practice	Selected mother
BF	Breastfeeding	Selected mother
Nut	Infant and young child nutrition	Selected mother
IMM	Immunization of children < 24 months	Selected mother
CD	Child development	Selected mother
ORS	ORS preparation	Selected mother
WS	Water and sanitation	Selected mother
MH	Maternal health	Selected mother

The initial questionnaire for this study was developed and captured in English so the two pairs of data collectors per district, spent time to translate the questionnaire into the most commonly spoken language(s) in their respective districts. These questionnaires were then independently retranslated into English to ensure reliability and validity. A full day of training was dedicated to consistent translation into the major languages spoken in the UWR.

3.4 STUDY POPULATION

The survey was carried out in communities spread over the then eight (8) districts of the Upper West Region; Wa municipality, Wa West, Wa East, Nadawli, Lawra, Jirapa-Lambussie, Sissala East and Sissala West districts. In 2008, a new district Lambussie-

Karnie, was carved out of the then Jirapa-Lambussie district. The communities are mainly rural and most people are engaged in subsistence farming. No urban community (population greater than 5,000) was included in the survey. The unit of study was the household. The household was defined as a self-sustaining unit consisting of two or more persons that are usually related by kinship or marriage. The members of the household contribute to its subsistence and maintenance and share in the food that is produced on a household basis. It is a socially recognized unit headed by one person (male or female) who represents the household at the community level and who is responsible for its economic and social management.

The study population comprised:

- All children aged 0-59 months
- Mothers/caregivers of children aged 0-59 months
- Household heads/husbands

3.5 STUDY VARIABLES

Based on the study objectives and the conceptual model, a number of study variables (dependent and independent) were derived. The dependent variables were the core-four household practices (breastfeeding, complementary feeding, ITN use and ORT) while the independent variables were: district, child characteristics, mother's characteristics, husband's characteristics and household wealth. (Table 3.2)

Table 3.2: Study variables

Study variable	Indicator	Operational definition/scale of measurement	Objective served
Child:			
Age	Age in completed months	Ratio	1,3
Sex	Male/female	Nominal	1,3
Mother:			
Age	Age in completed years	Ratio	1,3
Level of education	Formal education achieved	Rank ordered (none, basic, secondary, tertiary)	1,3
Ability to read and write English	Yes, No	Yes=1, No=0	1,3
Husband:			
Age	Age in completed years	Ratio	1,3
Level of education	Formal education achieved	Rank ordered (non, basic, secondary, tertiary)	1,3
Ability to read and write English	Yes, No	Yes=1, No=0	1,3
Household:			
Wealth	Wealth index (Filmer & Pritchett, 2001)	Lowest-highest quintile	1,3
Prevention practices:			
Initiation of breastfeeding	Breastfeeding initiation rate	Proportion of children put to the breast within an hour of delivery	2
Exclusive	Exclusive breastfeeding rate	Proportion of children	2

breastfeeding		exclusively breastfed	
Appropriate complementary feeding	Appropriate complementary feeding rate	Proportion of children aged 6-9 months appropriately fed*	2
ITBN use	Bed net coverage	Proportion of children who sleep under insecticide-treated bed nets	2
Treatment practices:			
Water source	Use of improved water source	Proportion of households who have access to improved water[α]	2
Sanitation	Use of improved sanitation facilities	Proportion of households who have access to improved sanitation[∞]	2
Home management of diarrhoea	Knowledge of ORS preparation	Proportion of mothers who correctly prepare ORS	2

* breastfed and fed at least twice a day according to IYCF practices
[α] improved source of drinking water = pipe-borne water, public tap, tube well, borehole, protected dug well, protected spring
[∞] adequate means of excreta disposal = flush toilet, covered ventilated improved pit latrine or covered pit latrine

3.6 SAMPLING AND SAMPLE SIZE

Each district in the Upper West Region has a number of sub-districts and each sub-district has communities. Sample selection was based on a two-stage cluster sampling method and because the populations of the various sub-districts were available, the first stage sampling

to select 30 communities (clusters) per district, was achieved through the probability proportional to size (PPS) method. By using this method the sub-districts with larger populations had a greater number of communities (clusters) selected. The second sampling stage involved the random selection of households in the study communities. Thirty clusters of households (communities) were sampled from each district and ten households per community giving a total of 300 households per district and 2,400 households in the UWR. Within any given district and sub-district, every rural community had an equal chance of being selected. The sub-district populations were determined based on projections from the 2000 Ghana Population and Housing Census. The required number of communities was randomly selected from a list of all communities supplied by the Ghana Health Service Trachoma Control Programme.

The sample size was estimated based on a modification to the WHO standard of 30 x 7 cluster sampling technique for assessing coverage of the Expanded Programme on Immunization (EPI). For the purposes of this survey, a 30 x 10 technique was applied so that 10 households (mothers) per community (cluster) were studied in 30 communities per district giving at least 300 mother and child under-five pairs per district. The primary sampling units (PSU) were the communities. Power was 90% at a significance level of 5%. Data collected using the 30-cluster sampling methodology can be compared directly with future surveys using the same sample methodology, even if population has increased 10-fold.

On reaching a selected community, the data collectors who worked in pairs, would report to the traditional head of the community to seek permission to proceed. With the assistance of

the village health worker/community-based surveillance volunteer/guinea worm volunteer or assembly member, a central location in the community was determined. A direction was then selected randomly by spinning a bottle to determine the first household of the cluster. Subsequently, the improved version of the random walk method used in the standard EPI cluster survey method and as described in the Multiple-Indicator Cluster Survey Manual 2005 (UNICEF, 2006) was followed to select nine other households to complete the ten per community schedule. The improved random walk method ensures the random selection of widely spread households which is characteristic of the study area. Each data collector covered five households per day. The households were marked according to the household number recorded on the questionnaire. Each pair of data collectors used a motorcycle to travel to and from the study sites. In total, 40 households needed to be reselected during the field work either because the household head was not present at the time of the interview or rarely they didn't have a child under-five and this figure can be considered as a refusal rate, equating to 1.25% refusal rate.

3.7 PRE-TESTING

The questionnaires were piloted in 16 communities (two per district) spread across the UWR. These communities were not part of the study communities. Based on the results of the piloting activity, a few modifications were made to the final draft questionnaire that had been developed during the training of the field workers, to ensure that the survey used a sub-district specific tool that did not differ too much from the other study sites, except for issues specific to the given sub-district.

3.8 DATA HANDLING

The field coordinator and the supervisors undertook two quality control exercises per cluster by either listening-in to portions of the interview or by repeating the questionnaire or portions of the questionnaire with the participant. All questionnaires that had been completed by the field workers were meticulously checked by the field supervisors for any omissions or ambiguous information. Any misunderstanding in interpretation was also dealt with at this time. This had to be corrected prior to a new questionnaire being allocated for the next cluster.

Data were processed alongside the collection. As part of the good field practices (GFP) to ensure good quality data, data collectors checked through questionnaires at the end of each interview and corrected errors on the spot. Field supervisors, the field coordinator and the principal investigator checked all questionnaires at pick up for completeness, correctness and inconsistencies. The principal investigator, the data manager and the respective DHAs kept electronic copies of the data which were updated every other day. The initial results and a preliminary report were submitted three weeks after the end of the field work. The questionnaire had a component of data coding and the data collector either circled or ticked the right answer where applicable. The data were double entered by pairs of data clerks and consistency checks were run on batches of data sets to pick up errors which were cleaned. Data entry started shortly after data collection had started and run concurrently with data collection for the rest of the data collection period. Final data cleaning lasted two months.

The final data sets were kept on a pass-worded computer at the Department of Community Health, Kwame Nkrumah University of Science and Technology-School of Medical

Sciences and were only accessible to the principal investigator and the data manager. The consent forms were kept separately in a locked safe at the Department.

3.9 DATA ANALYSIS

A database was created using MS Access™ 2007 software. Data were double-entered and statistical analysis was conducted using STATA Version 11 (Stata Corp, College Station, Texas: StataCorp LP, USA). We computed point estimates for the study variables and presented them as means or percentages. Odds ratios and associated 95% confidence intervals were computed to estimate the magnitude of associations between dependent (core-four household practices) and independent (district, child characteristics, mother's characteristics, husband's characteristics and household wealth) study variables in bivariate and multivariate logistic regression models; p-values ≤0.05 were considered as statistically significant. The district was considered a key independent variable.

3.10 ETHICAL CONSIDERATIONS

Ethical clearance was obtained from the Kwame Nkrumah University of Science and Technology (KNUST)/Komfo Anokye Teaching Hospital (KATH) Committee on Human Research, Publications and Ethics. Administrative clearance was sought from the respective district assemblies, the Regional Health Administrations and the DHAs. Permission to undertake the survey was obtained from the respective chief/community leader of the selected community/cluster. At the household level, the purpose of the study was explained to the head of the household and informed consent was obtained from the household head and the respondent in the form of a signed or witnessed right thumb printed form concerning their participation in the study (Appendix 6). The household head and

respondent were assured that neither they, nor members of their household will be denied access to health care or indeed any rights if they decided not to participate in the survey or refused to answer specific questions or failed to complete an interview. They were also assured that the data collected would be used only for the purposes of the study and that the results would be reported on district basis and in aggregated form.

3.11 LIMITATIONS OF STUDY

Cross-sectional surveys are not designed to prove or disprove causal relationships, but they can be used to assess the relative strength of associations between social, economic, biological, and environmental factors. A lot of the evidence that currently form the evidence-base for child survival programming worldwide has been the result of observational studies including cross-sectional surveys.

While every effort was made to ensure the reliability and validity of questions in this study, cultural and language factors may have affected the ways in which questions were asked by interviewers and, understood and answered by study participants. Reporting on human behaviour is extremely challenging. Many study participants may know the appropriate practice and hence report that behaviour (social desirability) but may not necessarily practice it; response bias. Self-reported data may reflect a perceived desirability of responses rather than factual knowledge or practices. For example, in the assessment of the practice of ORT in the home management of diarrhea, it is possible that some respondents, when asked about how they manage childhood diarrhoea in the home, would mention the use of ORS. By offering a sachet of ORS to respondents and asking mothers/caregivers to demonstrate ORS preparation, this study used a way of verifying their answers to the

questions on the home management of diarrhoea. Admittedly, being able to demonstrate the correct preparation of ORS does not necessarily mean that the respondent would use ORS for home the management of diarrhoea in children under-5 but it can be said with certainty that, those who failed to demonstrate the skill to properly prepare ORS, could at best have used poorly prepared ORS in the home management of diarrhoea in children.

Recall bias is another inherent problem with surveys of this nature. When respondents are asked to remember issues that occurred months or years ago, they may fail to accurately recollect such events.

The Mosley and Chen framework, which was the main theoretical framework upon which this study was conducted, identifies five groups of proximate determinants that influence the rate at which a healthy child becomes unhealthy; maternal factors, environmental contamination, nutrient deficiency, injury and personal illness control. This study did not ascertain the nutritional status of children. Communities' beliefs about disease and disease pathways, for example, may result in taboos or harmful traditional treatments. Such beliefs may lead to breastfeeding practices that are detrimental to infant health and behavioural underinvestment may even underlie the biological determinants of mortality but because they are difficult to quantify, this study did not explicitly consider them.

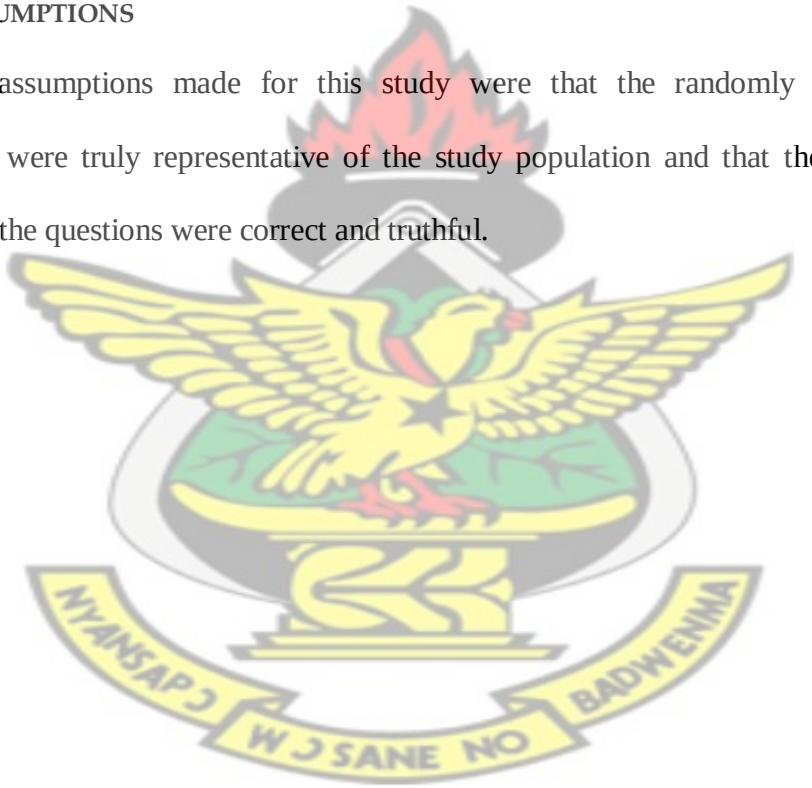
The study did not look at the effect of husbands or heads of households who were not the biological fathers of the index children; household practices involving the index child was the focus of the study and if the husband of the child's mother/caregiver was not the father

of this study child it is possible that this might have influenced some study outcomes. In nearly all cases, the 'mother/caregiver' of the study child was the biological mother.

Observational studies among households can reveal household and community level issues that might be amenable to affordable, deliverable and sustainable child survival interventions. Methodological weaknesses do not necessarily invalidate the massive amount of information provided by non-interventional studies.

3.12 ASSUMPTIONS

The main assumptions made for this study were that the randomly selected study participants were truly representative of the study population and that the answers they provided to the questions were correct and truthful.



Chapter 4

RESULTS

4.1 INTRODUCTION

Based on the study objectives, data were collected from 2400 households with 2422 children under-five. The results section is focused on four core household practices with the capacity to reduce the under-five mortality burden by 41% at universal coverage. In view of the fact that we have until 2015 to meet the MDG-4, a focus on a few interventions with the capacity to make the greatest improvement to child survival in the UWR, would be the most cost-effective path to follow. The chapter is broken into three sections that report on the demographic characteristics of the study participants and, the prevalence of preventive household practices and treatment household practices. Bivariate and multivariate analyses are conducted to better understand the factors associated with these practices. In particular, we focus on district level differences as a key independent variable.

4.2 SAMPLE CHARACTERISTICS

The sample characteristics are shown in Table 4.1. We first show the characteristics of the children, then mothers and fathers (husbands), and how they vary by district. We also report the overall values for the entire study population. Demographics measured include age of children and parents as well as maternal education and household wealth - two factors important to help explain differences in levels of household practices across and within different communities. Mothers and their husbands were assessed whether they were able to read and write the English language, which is the most common language used for health education materials in Ghana. Since all the communities were rural, the urban-rural divide was not applicable in this study. The districts were identified in all the tables as

follows: Jirapa-Lambussie (JL); Lawra (LA); Nadowli (NA); Sissala East (SE); Sissala West (SW); Wa East (WE); Wa Municipal (WM) and Wa West (WW).

We find statistically significant differences by district in many of the demographic and household variables. Chi-square tests were run to test for significance by trend. When the cell sizes were too small, and there were zero (0) respondents in any one cell we do not report the chi-square test value. **[Table 4.1]** The youngest children on average came from Wa East district while the oldest children came from Lawra district. Nearly two-in-five (39.1%) children were infants. There were nearly as many girls as there were boys in the study sample; 48.1% and 51.9% respectively. The mean number of children under-five per household was 1.2 (SD=0.4); three districts – Jirapa-Lambussie, Wa East and Wa West - had a mean of 1.1 children under-five per household. Most of the households (86.4%) had only one child under-five.

The modal age range for mothers across the region was 25-34 years; nearly half of mothers (49.6%) fell into this age group. Twenty-four (1.1%) mothers were under 18 years old. The majority of mothers/caregivers (87.9%) were without any formal education. A mother with a formal form of education was most likely to have had basic or secondary school level of education and this mother was likely to live in Lawra District; 28% of women with secondary level and 22% of women with basic level hailed from Lawra. One-in-four mothers who could read and write English was from Lawra District; those who were most likely to be unable to read and write English were from Wa West (14.8%). Across the districts, only 4.0% of households were headed by a female. **[Table 4.1]**

Most husbands were either aged 19-24 years or 25-34 years; 32.4% and 31.6% respectively. More than half (58.7%) of the husbands were older than 35 years. The proportion of husbands without any formal education matched that of the mothers in the study sample; 84% versus 87.9% respectively.

We generated wealth quintiles based on the overall sample so that the proportion of households in each wealth quintile was about 20%. By district, however, there are significant differences. The wealthiest households were located in Nadowli and Wa West districts while the poorest were in Jirapa-Lambussie district. **[Table 4.1]**

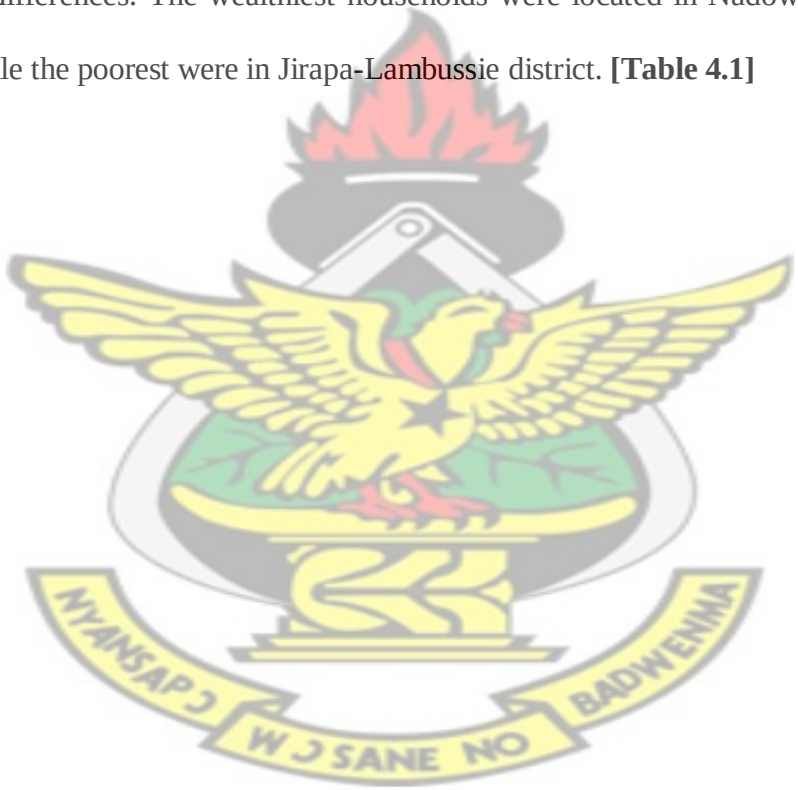


Table 4.1: Characteristics of children, parents and households by district

Variable	JL	LA	NA	SE	SW	WE	WM	WW	Total(%)	χ^2 test
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)		p_t-value
Child Characteristics:										
Age:										
Mean age (SD), months	19.0 (11.9)	23.0 (15.2)	18.8(14.1)	20.2 (14.4)	18.8 (12.8)	17.9 (11.9)	20.4 (13.9)	19.4 (12.6)	19.7(13.5)	≤ 0.001
Age category:										≤ 0.001
0-6	29(9.7)	46(15.4)	69(23.3)	53(17.7)	48(16.3)	63(21.2)	44(14.8)	45(15.2)	397(16.7)	
7-11	81(27.8)	54(18.0)	52(17.5)	59(19.7)	62(21.1)	63(21.2)	85(28.6)	77(26.0)	533(22.4)	
12-59	188(63.1)	199(66.6)	176(59.3)	187(62.6)	184(62.6)	171(57.6)	168(56.6)	174(58.8)	1447(60.9)	
Total	298(100.0)	299(100.0)	297(100.0)	299(100.0)	294(100.0)	297(100.0)	297(100.0)	296(100.0)	2377(100)	
Sex of index child:										0.78
Female	149(49.8)	141(47.2)	133(45.1)	130(49.6)	144(50.9)	138(46.5)	135(45.9)	144(50.2)	1114(48.1)	
Male	150(50.2)	158(52.8)	162(54.9)	132(50.4)	139(49.1)	159(53.5)	159(54.1)	143(49.8)	1202(51.9)	
Total	299(100.0)	299(100.0)	295(100.0)	262(100.0)	283(100.0)	297(100.0)	294(100.0)	287(100.0)	2316(100)	
Children < 5 years old:										
Mean (SD)	1.1 (0.3)	1.2 (0.4)	1.2 (0.4)	1.2 (0.4)	1.2 (0.4)	1.1 (0.5)	1.2 (0.4)	1.1 (0.3)	1.2(0.4)	

†Number:									
1	282(93.4)	247(80.7)	303(100.0)	229(75.8)	253(82.1)	270(90.0)	247(82.3)	261(86.7)	2092(86.4)
2	18(5.9)	58(19.0)	0(0.0)	72(23.9)	55(17.9)	24(8.0)	50(16.7)	40(13.3)	317(13.1)
3	0(0.0)	1(0.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(1.0)	0(0.0)	4(0.2)
4	2(0.7))	0(0.0)	0(0.0)	1(0.3)	0(0.0)	6(2.0)	0(0.0)	0(0.0)	9(0.4)
Total	302(100.0)	306(100.0)	303(100.0)	302(100.0)	308(100.0)	300(100.0)	300(100.0)	301(100.0)	2422(100)
Mother:									
†AGE CATEGORY (years):									
<18	5(1.8)	2(0.7)	3(1.1)	1(0.4)	4(1.5)	3(1.1)	1(0.4)	5(1.7)	24(1.1)
19-24	56(20.2)	44(14.8)	71(26.5)	78(28.4)	64(23.9)	87(30.8)	66(24.8)	81(27.4)	547(24.5)
25-34	134(48.4)	169(56.9)	97(36.2)	119(43.2)	143(53.3)	168(59.6)	138(51.9)	137(46.3)	1105(49.6)
35-44	70(25.3)	60(20.2)	79(29.5)	71(25.8)	51(19.0)	24(8.5)	57(21.4)	51(17.2)	463(20.8)
45-54	11(3.9)	19(6.4)	15(5.6)	5(1.8)	4(1.5)	0(0.0)	4(1.5)	18(6.1)	76(3.4)
55+	1(0.4)	3(1.0)	3(1.1)	1(0.4)	2(0.7)	0(0.0)	0(0.0)	4(1.3)	14(0.6)
Total	277(100.0)	297(100.0)	268(100.0)	275(100.0)	268(100.0)	282(100.0)	266(100.0)	296(100.0)	2229(100)

†EDUCATION										
LEVEL:	265(95.0)	233(78.4)	137(84.0)	243(87.4)	191(82.3)	234(85.7)	253(96.2)	276(92.0)	1832(87.9)	≤ 0.001
None	1(0.4)	4(1.3)	2(1.2)	0(0.0)	0(0.0)	0(0.0)	2(0.8)	0(0.0)	7(0.3)	
Adult literacy	1(0.4)	5(1.7)	3(1.8)	4(1.4)	6(2.6)	12(4.4)	2(0.8)	0(0.0)	33(1.6)	
Basic 1-3	4(1.4)	27(9.1)	6(3.7)	16(5.8)	24(10.3)	15(5.5)	0(0.0)	19(6.3)	111(5.3)	
Basic 4-6	7(2.5)	27(9.1)	15(19.2)	15(5.4)	10(4.3)	12(4.4)	5(1.9)	5(1.7)	96(4.6)	
Secondary	1(0.4)	1(0.3)	0(0.0)	0(0.0)	1(0.4)	0(0.0)	1(0.4)	0(0.0)	4(0.2)	
Tertiary	279(100.0)	297(100.0)	163(100.0)	278(100.0)	232(100.0)	273(100.0)	263(100.0)	300(100.0)	2085(100)*	
Total										
ABILITY TO READ &										
WRITE ENGLISH:	13(4.7)	60(20.2)	29(20.1)	32(11.5)	40(15.4)	27(9.6)	7(2.7)	24(8.0)	232(11.0)	≤ 0.001
Yes	264(95.3)	237(79.8)	115(79.9)	247(88.5)	219(84.6)	255(90.4)	256(92.0)	276(92.0)	1869(89.0)	
No	277(100.0)	297(100.0)	144(100.0)	279(100.0)	259(100.0)	282(100.0)	263(100.0)	300(100.0)	2101(100)	
Total										
Female household head:	8(2.6)	4(1.3)	4(1.3)	76(25.2)	4(1.3)	0(0.0)	2(0.7)	0(0.0)	98(4.0)	≤ 0.001
Yes	294(97.4)	302(98.7)	299(98.7)	226(74.8)	304(98.7)	300(100.0)	298(99.3)	301(100.0)	2324(96.0)	
No	302(100.0)	306(100.0)	303(100.0)	302(100.0)	308(100.0)	300(100.0)	300(100.0)	301(100.0)	2422(100)	

Total									
Husband:									
† AGE (YEARS):	0(0.0)	1(0.3)	2(0.7)	29(0.7)	0(0.0)	0(0.0)=	0(0.0)	0(0.0)	32(1.3)
<18	12(4.4)	2(0.7)	32(10.8)	51(17.2)	13(4.4)	39(13.1)	12(4.1)	18(6.0)	179(7.5)
19-24	76(28.0)	104(35.4)	102(34.6)	80(26.9)	94(31.5)	147(49.5)	83(28.1)	83(27.7)	769(32.4)
25-34	71(26.2)	115(39.1)	73(24.7)	90(30.3)	97(32.6)	81(27.3)	113(38.3)	110(36.7)	750(31.6)
35-44	90(33.2)	55(18.7)	53(18.0)	53(17.8)	65(21.8)	27(9.1)	74(25.1)	58(19.3)	475(20.0)
45-54	22(8.1)	17(5.8)	33(11.2)	21(7.1)	29(9.7)	3(1.0)	13(4.4)	31(10.3)	169(7.1)
55+	271(100.0)	294(100.0)	295(100.0)	297(10.0)	298(100.0)	297(100.0)	295(100.0)	300(100.0)	2374(100)*
Total									
†EDUCATION									
LEVEL:	255(87.0)	210(71.9)	118(71.5)	267(89.9)	207(78.7)	261(87.9)	267(90.2)	263(87.7)	1848(84.0)
	3(1.0)	5(1.7)	1(0.6)	1(0.3)	4(1.5)	1(1.0)	1(0.3)	9(3.0)	25(1.1)
None	1(0.3)	2(0.7)	3(1.8)	3(1.0)	3(1.1)	0(0.0)	0(0.0)	9(3.0)	21(1.0)
Adult literacy	13(4.4)	21(7.2)	15(9.1)	10(3.4)	20(7.6)	12(4.0)	2(0.7)	4(1.3)	97(4.4)

Basic 1-3 years	14(4.8)	39(13.4)	24(14.6)	14(4.7)	27(10.3)	21(7.1)	24(8.1)	15(5.0)	178(8.1)	
Basic 4-6 years	7(2.4)	15(5.1)	4(2.4)	2(0.7)	2(0.8)	0(0.0)	2(0.7)	0(0.0)	32(1.4)	
Secondary	293(100.0)	292(100.0)	165(100.0)	297(100.0)	263(100.0)	295(100.0)	296(100.0)	300(100.0)	2201(100)	
Tertiary										
Total										≤ 0.001
ABILITY TO READ &	39(13.3)	83(28.2)	54(22.7)	24(8.1)	53(18.0)	36(12.0)	29(9.8)	37(13.2)	355(15.5)	
WRITE ENGLISH	254(86.7)	211(71.8)	184(77.3)	273(91.9)	242(82.0)	264(88.0)	267(90.2)	243(86.8)	1938(84.5)	
Yes	293(100.0)	294(100.0)	238(100.0)	297(100.0)	295(100.0)	300(100.0)	296(100.0)	280(100.0)	2293(100)	
No										
Total	118(43.4)	71(23.8)	72(26.6)	48(16.3)	68(24.8)	63(21.6)	56(19.1)	5((1.7)	501(21.9)	≤ 0.001
Household wealth:	39(14.3)	72(24.2)	26(9.6)	70(23.8)	64(23.4)	42(14.4)	56(19.1)	47(16.2)	416(18.2)	
Quintile 1	17(6.2)	58(19.5)	52(19.2)	84(28.6)	52(19.0)	51(17.5)	63(21.5)	81(27.9)	458(20.1)	
Quintile 2	62(22.8)	51(17.1)	52(19.2)	41(13.9)	37(13.5)	57(19.6)	65(22.2)	88(30.3)	453(19.8))	
Quintile 3	36(13.2)	46(15.4)	69(25.5)	51(17.3)	53(19.3)	78(26.8)	53(19.1)	69(23.8)	455(19.9)	
Quintile 4	272(100.0)	298(100.0)	271(100.0)	294(100.0)	274(100.0)	291(100.0)	293(100.0)	290(100.0)	2283(100)*	
Quintile 5										
Total										

*Due to rounding off, figures may not add up to 100%; † Chi-square test for trend not conducted due to zeros in some cells

4.3 HOUSEHOLD PRACTICES

The household practices known to impact child survival, growth and development have been grouped into two categories; preventive and treatment practices (Jones et al., 2003). The preventive practices with the potential to have the biggest impact on child survival are strongly tied to behaviour and are not very dependent on the performance of the formal health system. Examples of such preventive practices assessed by this study included: exclusive breastfeeding for six months, appropriate complementary feeding and insecticide-treated bed net (ITBN) use among children under-five.

In order to determine the factors that are associated with household practices, the data were analyzed using both bivariate and multivariate logistic regressions. First we show the unadjusted associations with each outcome, and then show a multivariate model that includes all of the covariates in the same model. The independent variables (cofactors), in addition to district, were as follows: age of index child, sex of index child, number of children under-5, mother's age, mother able to read and write, husband's age, husband able to read and write and household wealth.

4.3.1 Household preventive practices

For breastfeeding, characteristics such as initiation of breastfeeding within one hour of delivery, and exclusive breastfeeding for 6 months were explored for the youngest child (index child). Complementary feeding practices were assessed by asking mothers whether they continued to feed the index child breastmilk in addition to freshly-prepared nutrient- and energy-rich foods. The number of times a child aged 6-9 months was fed breastmilk in

the 24-hour period preceding the survey and the kinds of foods the child was fed, as reported by the mother or caregiver, were used to determine whether the child was receiving appropriate complementary feeding. ITN use was assessed by asking mothers whether the index child slept under an ITN the previous night preceding the survey.

4.3.2 Breastfeeding practices

Across the Upper West Region, less than 1-in-2 women (42.5%), put their newborns to the breast within an hour of delivery. The chi-square test for trend showed that the districts differed significantly in the early initiation of breastfeeding. The highest rate of initiation within one hour was recorded in the Lawra district (84.1%) compared with the lowest rate in the Wa West district (2.4%). **[Table 4.2]**

Table 4.2: Household breastfeeding practices in the Upper West Region by district

Variable	JL	LA	NA	SE	SW	WE	WM	WW	Total (%)	χ^2 test
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)		p_t-value
BREASTFEEDING:										
Initiation										
(within 1 hour)										≤ 0. 001
Yes	215(72.9)	175(84.1)	136(61.8)	55(18.7)	128(49.6)	85(40.7)	29(13.4)	6(2.4)	829(42.5)	
No	80(27.1)	33(15.9)	84(38.2)	239(81.3)	130(50.4)	124(59.3)	187(86.6)	246(97.6)	1123(57.5)	
Total	295(100.0)	208(100.0)	220(100.0)	294(100.0)	258(100.0)	209(100.0)	216(100.0)	252(100.0)	1952(100)	

The district level association with early initiation of breastfeeding, which is a marker for exclusive breastfeeding, was assessed. Using Jirapa-Lambussie district (JL) as the reference, all other districts were compared with JL in logistic regression models. In bivariate logistic regression model, compared with JL, mothers in all the other districts differed significantly in the early initiation of breastfeeding (breastfeeding within an hour of delivery). In all districts except LA, mothers were significantly less likely to initiate breastfeeding within an hour of delivery, compared with mothers in JL; mothers in LA were significantly more likely to have initiated breastfeeding early. Among the other covariates, older children (OR=0.99, p≤0.05), children in households with more children under-5 (OR=0.68, p≤0.01), and children in wealthier households (OR=0.76, p≤0.001) were significantly less likely to be breastfed early. In contrast, children with a mother or 'father' (mother's husband) who could read and write were significantly more likely to be breastfed early (OR=1.66, p≤0.01 and OR=1.76, p≤0.001 respectively). After multivariate adjustment, district remains the most consistent predictor of early breastfeeding initiation. Among the other covariates, only household wealth remained statistically significant after multivariate adjustment (p≤0.001); mothers from wealthier households were less likely to initiate breastfeeding within an hour of delivery (AOR=0.85; p-value≤0.001; 95%CI: 0.77-0.93). **[Table 4.3]**

Table 4.3: Bivariate and multivariate logistic regressions of the factors associated with early initiation of breastfeeding in the Upper West Region (n=1513)

Variable	OR	95% CI	AOR	95%CI
District				
JL (reference)	1			
LA	1.77*	1.09-2.89	1.83*	1.11-3.03
NA	0.19***	0.11-0.32	0.19***	0.11-0.33
SE	0.06***	0.04-0.10	0.06***	0.04-0.10
SW	0.33***	0.22-0.51	0.34***	0.22-0.52
WE	0.21***	0.14-0.33	0.22***	0.14-0.34
WM	0.45***	0.03-0.08	0.05***	0.03-0.08
WW	0.01***	0.00-0.02	0.01***	0.00-0.02
Age of Child	0.99*	0.98-0.99	0.99	0.98-1.00
Sex of Child	1.19	0.99-1.46	1.15	0.89-1.50
Number of children under-5	0.68**	0.53-0.88	0.76	0.56-1.04
Mother's age	0.93	0.82-1.06	0.96	0.77-1.19
Mother reads and writes English	1.66**	1.20-2.30	1.08	0.70-1.66
Husband's age	0.94	0.85-1.04	0.95	0.80-1.11
Husband reads and writes English	1.76***	1.34-2.31	1.03	0.72-1.47
Household wealth	0.76***	0.71-0.82	0.85***	0.77-0.93

***p≤0.001, **p≤0.01, *p≤0.05

Three-in-four children (77.3%) were not exclusively breastfed for 6 months. The highest breastfeeding rate was recorded in WM (57.6%) while children in WW were the least likely to be exclusively breastfed; the districts differed significantly in exclusive breastfeeding rates. **[Table 4.4]**

Table 4.4: Exclusive breastfeeding prevalence in the Upper West Region by district

Variable	JL	LA	NA	SE	SW	WE	WM	WW	Total (%)	χ^2 test
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)		p_t-value
Breastfeeding:										
EXCLUSIVE										≤ 0.001
Yes	19(6.8)	17(9.4)	23(14.4)	40(14.8)	85(34.8)	69(46.9)	106(57.6)	6(4.2)	365(22.7)	
No	259(93.2)	163(90.6)	137(85.6)	230(85.2)	159(65.2)	78(53.1)	78(42.4)	138(95.8)	1242(77.3)	
Total	278(100.0)	180(100.0)	160(100.0)	270(10.0)	244(100.0)	147(100.0)	184(100.0)	144(100.0)	1607(100)	

When compared with mothers in Jirapa-Lambussie (JL), mothers in Sissala West (SW), Wa East (WE) and Wa Municipal were significantly more likely to have exclusively breastfed their index child for six months ($p \leq 0.001$) in both the unadjusted and the adjusted regression models. Compared with mothers in JL, mothers in Wa Municipal had the highest odds of exclusively breastfeeding (AOR=16.06). Among the other covariates, the unadjusted model showed that children in households with more children under-5 were significantly more likely to have been exclusively breastfed (OR=1.40, $p \leq 0.05$). Further analyses (adjusted model), were undertaken to determine whether other covariates such as child, mother and husband characteristics as well as household wealth influenced exclusive breastfeeding; except district, none of these covariates were significantly associated with exclusive breastfeeding. **[Table 4.5]**

Table 4.5: Bivariate and multivariate logistic regressions of factors associated with exclusive breastfeeding for six months in the Upper West Region (n=1249)

Variable	OR	95% CI	AOR	95%CI
District				
JL (reference)	1			
LA	1.26	0.62-2.55	1.24	0.61-2.52
NA	1.15	0.43-3.05	1.06	0.40-2.87
SE	2.23*	1.20-4.15	2.13*	1.14-4.01
SW	6.48***	3.61-11.62	6.56***	3.61-11.89
WE	10.98***	5.99-20.14	10.37***	5.54-19.39
WM	16.28***	9.02-29.37	16.06***	8.83-29.20
WW	0.56	0.21-1.45	0.52	0.20-1.37
Age of Child	0.99	0.98-1.00	1.00	0.98-1.01
Sex of Child	1.03	0.79-1.34	1.15	0.85-1.55
Number of children under-5	1.40*	1.06-1.85	1.15	0.84-1.57
Mother's age	0.94	0.80-1.11	1.18	0.91-1.52
Mother reads and writes English	0.66	0.41-1.06	0.87	0.51-1.49
Husband's age	0.95	0.83-1.07	0.93	0.77-1.13
Husband reads and writes English	0.80	0.56-1.16	0.99	0.64-1.52
Household wealth	1.07	0.98-1.17	1.05	0.96-1.17

***p≤0.001, **p≤0.01, *p≤0.05

4.3.3 Appropriate complementary feeding

Mothers were asked questions regarding the feeding practices for children aged 6-9 months in the 24-hour period preceding the survey. Across the UWR, 78.1% of eligible children did not receive appropriate complementary feeding. Complementary feeding practices at the household level also differed significantly across the districts. Even though none of the districts had more than half of their children receiving appropriate complementary feeding, children in Wa Municipal less often received appropriate complementary feeding (4.8%) while those in Jirapa-Lambussie District most often received appropriate complementary feeding (43.6%). **[Table 4.6]**

Table 4.6: Complementary feeding practices in the Upper West Region by district.

Variable	JL	LA	NA	SE	SW	WE	WM	WW	Total	χ^2 test
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	p_t-value
Complementary feeding:										
APPROPRIATE										≤ 0.001
Yes	99(43.6)	32(20.8)	38(23.0)	15(6.4)	79(39.3)	46(25.1)	11(4.8)	19(12.4)	339(21.9)	
No	128(56.4)	122(79.2)	127(77.0)	219(93.6)	122(60.7)	137(74.9)	219(95.2)	134(87.6)	1208(78.1)	
Total	227(100.0)	154(100.0)	165(100.0)	234(100.0)	201(100.0)	183(100.0)	230(100.0)	153(100.0)	1547(100)	

When compared with children in JL, children in all the other districts were less likely to have received appropriate complementary feeding (statistically significant in all except SW). Among the other factors, children whose mothers could and write (OR=1.95, p≤0.01), and children from households with older husbands (OR=1.27, p≤0.001) were significantly more likely to have been fed appropriately at age 6-9 months. On the contrary, children from wealthier households were significantly less likely to have been fed appropriately at that age (OR=0.81, p≤0.001). After multivariate adjustment, district remained a highly significant factor associated with lower appropriate complementary feeding in LA, NA, SE, WM and WW (p≤0.001). A mother's ability to read and write English and a husband's age were other covariates that stayed significant after multivariate adjustment; compared with mothers who could not read and write English, those who could, were twice as likely to have given their index child appropriate complementary foods (AOR=2.2; p≤0.01; 95%CI:1.35-3.65) while older husbands were 1.3 times more likely than younger husbands, to be associated with appropriate complementary feeding for infants and young children. The effect of household wealth which becomes non-significant in the adjusted model is likely explained by the district level variation in wealth **[Table 4.7]**

Table 4.7: Bivariate and multivariate logistic regressions of factors associated with appropriate complementary feeding in the Upper West Region (n=1249)

Variable	OR	95% CI	AOR	95%CI
District				
JL (reference)	1			
LA	0.32***	0.20-0.53	0.30***	0.18-0.51
NA	0.10***	0.04-0.27	0.11***	0.04-0.29
SE	0.95***	0.05-0.18	0.10***	0.05-0.19
SW	0.69	0.44-1.09	0.68	0.42-1.09
WE	0.44***	0.27-0.69	0.57*	0.35-0.93
WM	0.07***	0.04-0.14	0.08***	0.04-0.16
WW	0.14***	0.07-0.26	0.15***	0.08-0.29
Age of Child	1.01	1.00-1.03	1.02	1.00-1.03
Sex of Child	1.29	0.97-1.71	1.19	0.88-1.62
Number of children under-5	0.70	0.48-1.02	0.99	0.67-1.46
Mother's age	1.12	0.94-1.32	1.03	0.81-1.30
Mother reads and writes English	1.95**	1.28-2.96	2.22**	1.35-3.65
Husband's age	1.27***	1.11-1.45	1.31**	1.09-1.57
Husband reads and writes English	1.22	0.85-1.75	1.03	0.67-1.57
Household wealth	0.81***	0.72-0.90	0.90	0.81-1.01

***p≤0.001, **p≤0.01, *p≤0.05

4.3.4 Insecticide-treated net use

More than two-in-three children under-5 (67.9%), slept under an insecticide-treated bed net (ITBN), the night preceding the survey. The districts differed significantly in terms of this variable; the highest proportion of children under-5 who slept under an ITBN the previous night was recorded in Jirapa-Lambussie (91.0%) while only 39.1% did so in Sissala East District. In the Sissala East and Nadowli districts, less than half of the children under-5 slept under an ITBN the previous night. The rest of the districts recorded coverage ranging from 66.5% - 81.0%; figures well below universal coverage. **[Table 4.8]**

Table 4.8: ITBN use in children under-five by district in the Upper West Region

Variable	JL	LA	NA	SE	SW	WE	WM	WW	Total	χ^2 test
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	p_t-value
ITBN USE										≤ 0.001
Yes	242(91.0)	192(71.4)	118(45.7)	111(39.1)	219(77.4)	195(72.0)	204(81.0)	153(66.5)	1434(67.9)	
No	24(9.0)	77(26.6)	140(54,3)	173(60.9)	64(22.6)	76(28.0)	48(19.0)	77(33.5)	679(32.1)	
Total	266(100.0)	28(100.0)	158(100.0)	284(100.0)	283(100.0)	271(100.0)	252(100.0)	230(100.0)	2113(100)	

As with the other analyses, Jirapa-Lambussie district (JL) was the reference and all other districts were compared with JL; in the unadjusted model, children all the districts differed significantly from JL. Among the other covariates, children from wealthier households were significantly less likely to have slept under a treated bed net (OR=0.78, p≤0.001). After multivariate adjustment children in all the other districts, compared with children in JL were significantly less likely to have slept under an insecticide treated bed net (ITN) the night preceding the survey. Household wealth also remained significant in the multivariate model; compared with children from poorer households, children from wealthier households were significantly less likely to have slept under a treated bed net the night preceding the survey (AOR=0.78; p≤0.001; 95%CI: 0.72-0.85). **[Table 4.9]**

Table 4.9: Bivariate and multivariate logistic regressions of the predictors of insecticide-treated net use in the Upper West Region

Variable	OR	95% CI	AOR	95%CI
District				
JL (reference)	1			
LA	0.24***	0.13-0.41	0.23***	0.13-0.41
NA	0.06***	0.03-0.10	0.06***	0.03-0.10
SE	0.06***	0.03-0.10	0.06***	0.03-0.10
SW	0.35***	0.19-0.62	0.38**	0.21-0.70
WE	0.23***	0.13-0.41	0.27**	0.15-0.48
WM	0.38**	0.21-0.70	0.43***	0.24-0.78
WW	0.20***	0.11-0.35	0.25***	0.14-0.44
Age of Child	1.00	0.99-1.00	1.00	0.99-1.01
Sex of Child	1.14	0.93-1.40	1.19	0.95-1.49
Number of children under-5	0.95	0.75-1.20	1.16	0.89-1.53
Mother's age	0.96	0.85-1.09	1.08	0.90-1.30
Mother reads and writes English	0.93	0.67-1.29	1.01	0.69-1.47
Husband's age	0.99	0.90-1.10	0.92	0.79-1.07
Husband reads and writes English	1.19	0.89-1.58	1.04	0.75-1.45
Household wealth	0.78***	0.73-0.84	0.78***	0.72-0.85

***p≤0.001, **p≤0.01, *p≤0.05

4.4 HOUSEHOLD TREATMENT PRACTICES

Household treatment or curative practices tend to be associated with contact with the health system. The most impressive household practice, in terms of capacity to reduce under-five mortality at universal coverage, is oral rehydration therapy (ORT); others are case management of malaria and ARI. This study assessed only ORT.

4.4.1 Diarrhoea prevalence

Mothers were asked whether any child under-five had had diarrhoea (described as frequent watery stools) in the two weeks preceding the study. Interviewers showed mothers, a picture of a child with diarrhoea, as used by community-based agents in their health education activities at the household/community level. Diarrhoea prevalence in the two weeks preceding the survey was highest in Wa West District (28.9%) and lowest in Lawra District (4.6%). **[Table 4.10]**

4.4.2 Diarrhoea management

Mother's skill in ORS preparation was used as proxy for the management of diarrhoea using ORT. Mothers or caregivers were given a sachet of ORS and asked to prepare ORS for a child under-five who has diarrhoea. The following preparation steps were assessed: mother/caregiver washes hands with soap and water before preparation, washes container, uses clean water, uses enough water, stirred content and used entire sachet content. If a mother/caregiver did all of the above, she was deemed to have correctly prepared ORS but if she skipped one step or more, she was deemed as unable to correctly prepare ORS. Half (53.0%) of mothers/caregivers in the UWR knew how to correctly prepare ORS. The districts however differed significantly in this skill; mothers/caregivers in Lawra District (70.9%) were the most likely to have

demonstrated correct ORS preparation while those in Wa West District (13.1%) were the least likely. **[Table 4.10]**

With reference to the correct steps for ORS preparation, the most defective step was handwashing with soap prior to preparing the ORS (44.6%); mothers/caregivers in Wa West most often missed this step. Most women (86.0%) used clean water and women who were residents of LA, SW and WM most often did this step. Nine-in-ten households had access to clean drinking water (piped water, bore hole, public tap, protected dug well, protected spring and rain water) but only one tenth of households had access to toilets that could be described as improved (flush, pour flush, ventilated improved pit latrine, pit latrine with slab and composting toilet). **[Table 4.10]**

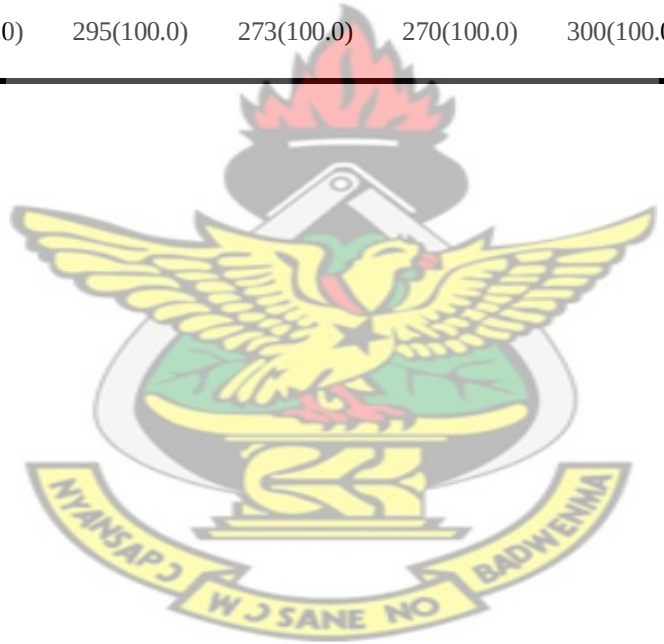
Table 4.10: Home-based management of diarrhoea in the UWR by district

Variable	JL	LA	NA	SE	SW	WE	WM	WW	Total	χ^2 test
	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	n(%)	p_t-value
Diarrhoea:										
PREVALENCE										≤ 0.001
Yes	25(8.3)	14(4.6)	39(12.9)	46(15.2)	37(12.0)	30(10.0)	61(20.3)	87(28.9)	339(14.0)	
No	277(91.7)	292(95.4)	264(87.1)	256(84.8)	271(88.0)	270(90.0)	239(79.7)	214(71.1)	2083(86.0)	
Total	302(100.0)	306(100.0)	303(100.0)	302(100.0)	308(100.0)	300(100.0)	300(100.0)	301(100.0)	2422(100)	
ORS										
PREPARATION										
CORRECT										≤ 0.001
Yes	176(63.3)	192(70.9)	94(31.8)	127(42.9)	96(39.6)	159(58.0)	148(49.3)	27(13.1)	1019(47.0)	
No	102(36.7)	79(29.1)	202(68.2)	169(57.1)	153(61.4)	115(42.0)	152(50.7)	179(86.9)	1151(53.0)	
Total	278(100.0)	271(100.0)	296(100.0)	296(100.0)	249(100.0)	274(100.0)	300(100.0)	206(100.0)	2170(100)	

PROBLEMS										
Handwashing with soap										≤ 0.001
Yes	192((70.1)	204(74.7)	116(48.6)	172(58.1)	121(49.0)	108(38.9)	163(54.3)	34(34.7)	1110(55.4)	
No	82(29.9)	69(25.3)	123(51.4)	124(41.9)	126(51.0)	170(61.1)	137(45.7)	64(65.3)	895(44.6)	
Total	274(100.0)	273(100.0)	239(100.0)	296(100.0)	247(100.0)	278(100.0)	300(100.0)	98(100.0)	2005(100)	
Washes container										≤ 0.001
Yes	191(69.7)	242(89.0)	174(72.8)	216(73.0)	206(83.0)	219(79.9)	277(92.3)	79(80.6)	1604(80.2)	
No	83(30.3)	30(11.0)	65(27.2)	80(27.0)	42(17.0)	55(20.1)	23(7.7)	19(19.4)	397(19.8)	
Total	274(100.0)	272(100.0)	239(100.0)	296(100.0)	248(100.0)	274(100.0)	300(100.0)	98(100.0)	2001(100)	
Uses clean water										≤ 0.001
Yes	193(70.4)	248(91.5)	199(83.3)	228(77.0)	236(95.6)	244(89.0)	284(94.7)	87(89.7)	1719(86.0)	
No	81(29.6)	23(8.5)	40(16.7)	68(23.0)	11(4.4)	30(11.0)	16(5.3)	10(10.3)	279(14.0)	
Total	274(100.0)	271(100.0)	239(100.0)	296(100.0)	247(100.0)	274(100.0)	300(100.0)	97(100.0)	1998(100)	
Enough water used										≤ 0.001

Yes	187(68.2)	208(76.8)	126(52.7)	156(52.7)	133(53.9)	188(68.6)	199(66.3)	40(41.2)	1237(61.9)	
No	87(31.7)	63(23.2)	113(47.3)	140(47.3)	114(46.1)	86(31.4)	101(33.7)	57(58.8)	761(38.1)	
Total	274(100.0)	271(100.0)	239(100.0)	236(100.0)	247(100.0)	274(100.0)	30(100.0)	97(100.0)	1998(100)	
Stirred content										≤ 0.001
Yes	189(69.0)	212(78.2)	164(68.9)	166(66.1)	160(64.8)	238(86.9)	257(85.7)	72(73.5)	1458(73.0)	
No	85(31.0)	59(21.8)	74(31.1)	130(43.9)	87(35.2)	36(13.1)	43(14.3)	26(26.5)	540(27.0)	
Total	274(100.0)	271(100.0)	238(100.0)	296(100.0)	247(100.0)	274(100.0)	300(100.0)	98(100.0)	1998(100)	
Entire sachet used										≤0 .001
Yes	192(70.1)	235(86.7)	204(85.4)	193(65.2)	213(86.6)	241(88.0)	271(90.6)	76(77.6)	1625(81.4)	
No	82(29.9)	36(13.3)	35(14.6)	103(34.8)	33(13.4)	33(12.0)	28(9.4)	22(22.4)	372(18.6)	
Total	274(100.0)	271(100.0)	239(100.0)	296(100.0)	246(100.0)	274(100.0)	299(100.0)	98(100.0)	1997(100)	
WATER SOURCE										≤ 0.001
Improved	279(94.9)	285(96.0)	260(87.5)	283(95.3)	293(99.0)	300(100.0)	170(56.7)	263(89.8)	2133(89.8)	
Not improved	15(5.1)	12(4.0)	37(12.5)	14(4.7)	3(1.0)	0(0.0)	130(43.3)	30(10.2)	241(10.2)	

Total	294(100.0)	297(100.0)	297(100.0)	297(100.0)	296(100.0)	300(100.0)	300(100.0)	293(100.0)	2374(100)	
TOILET										≤ 0.001
Improved	4(1.4)	54(76.0)	17(5.7)	17(5.8)	54(19.8)	14(5.2)	40(13.3)	20(7.0)	220(10.6)	
Not improved	290(98.6)	17(24.0)	280(94.3)	278(94.2)	219(80.2)	256(94.8)	260(86.7)	265(93.0)	1865(89.4)	
Total	294(100.00	71(100.0)	297(100.0)	295(100.0)	273(100.0)	270(100.0)	300(100.0)	285(100.0)	2085(100)	



Compared with mothers in JL, mothers in NA, SE, SW, WM and WW differed significantly in their ability to demonstrate the skill of ORS preparation; the mothers in these districts were significantly less likely to know how to prepare ORS. Among the other study covariates, a mother who could read and write (OR=1.63, p≤0.01), and had a husband who could read and write (OR=1.96, p≤0.001), was significantly more likely to have correctly prepared ORS. However, mothers with old husbands (OR=0.88, p≤0.01), and mothers from wealthier households (OR=0.85, p≤0.001), were significantly less likely to have correctly prepared ORS. In the adjusted model, the same districts remained significantly associated with correct preparation of ORS compared with JL. In addition, mother's age, husband's age, husband's ability to read and write, and household wealth were significantly associated with correct preparation of ORS. Compared with younger women, older women were 1.21 times as likely to correctly prepare ORS (AOR=1.21, p≤0.05, 95%CI:1.02-1.44). Compared with mothers with young husbands, those with older husbands were significantly less likely to have correctly prepared ORS (AOR=0.84, p≤0.05, 95%CI:0.73-0.96). When mothers with husbands who could not read and write were compared with those whose husbands could read and write, mothers whose husbands could read and write were 1.65 times more likely to have correctly prepared ORS (AOR=1.65; p≤0.01; 95%CI: 1.22-2.24). Women from wealthier households were significantly less likely to have correctly prepared ORS (AOR=0.91; p≤0.05; 95%CI: 0.85-0.98). **[Table 4.11]**

Table 4.11: Bivariate and multivariate logistic regressions of the factors influencing maternal knowledge of ORS preparation in the Upper West Region

Variable	OR	95% CI	AOR	95%CI
District:				
JL (reference)	1		1	
LA	1.25	0.84-1.84	1.14	0.76-1.71
NA	0.36***	0.22-0.56	0.32***	0.20-0.52
SE	0.35***	0.24-0.52	0.36***	0.24-0.54
SW	0.32***	0.21-0.48	0.31***	0.20-0.47
WE	0.70	0.48-1.03	0.71	0.48-1.06
WM	0.49***	0.34-0.72	0.53**	0.36-0.78
WW	0.08***	0.04-0.13	0.08***	0.05-0.14
Age of Child	1.00	0.99-1.01	1.00	0.99-1.01
Sex of Child	0.91	0.75-1.10	0.92	0.75-1.13
Number of children under-5	0.86	0.68-1.08	0.88	0.69-1.13
Mother's age	0.98	0.87-1.11	1.21*	1.02-1.44
Mother reads and writes English	1.63**	1.20-2.22	1.29	0.90-1.83
Husband's age	0.88**	0.80-0.96	0.84*	0.73-0.96
Husband reads and writes English	1.96***	1.50-2.56	1.65**	1.22-2.24
Household wealth	0.85***	0.79-0.91	0.91*	0.85-0.98

(n=1675)***p≤0.001, **p≤0.01, *p≤0.05

Chapter 5

5.0 DISCUSSION

5.1 INTRODUCTION

This chapter discusses the results in more detail. The results are compared with results from other surveys. Since results from sub-national surveys with large enough sample sizes were not available to be used in the discussion. The results of this study are compared with national surveys such as the 2006 Ghana Multiple-indicator Cluster Survey and the 2008 Ghana Demographic and Health Survey. The limitation here is that the sample sizes for Upper West Region in these surveys are small creating difficulty in the interpretation of the results. Even though the 2006 Ghana MICS oversampled in the rural enumeration areas of Upper West, Northern and Upper East regions, the idea was to ensure an adequate number of complete interviews to provide estimates with acceptable statistical precision at the regional level; the district level was not targeted.

Among the cofactors known to influence the household practices important for child survival, maternal characteristics such level of education and wealth are key (WHO, 2010) but others such as child characteristics (age, sex, number of children under-five in the household), husband/head of household's characteristics (age, level of education, ability to read and write English) and household wealth are also important predictors of the coverage of key household practices. These factors become extremely important when the assessment is limited to household practices that do not necessarily require contact with the formal health service.

5.2 HOUSEHOLD PREVENTIVE PRACTICES

Studies show that a set of 23 effective interventions; 15 preventive (9 child, 6 newborn) and 8 case management (6 child, 2 newborn), could reduce child mortality by 63% if they reached universal coverage (Jones et al., 2003; The Bellagio Study Group 2003; Boschi-Pinto, Bahl & Martines, 2009; Bhutta et al., 2010). Universal coverage is defined as 99% for all 23 interventions except exclusive breastfeeding interventions which is set at 90% (Lawn et al., 2006).

5.2.1 Breastfeeding practices

Prior studies have noted the importance of breastfeeding practices, especially exclusive breastfeeding for six (6) months and initiating breastfeeding within an hour of delivery; these are household preventive practices that could reduce the burden of deaths in under-fives if universally practiced (Jones et al., 2003; The Bellagio Study Group on Child Survival, 2003; WHO, 2004). Mothers in this study were asked how long after delivering their youngest child, did they put the child to the breast. Data from this study show that in the Upper West Region, 43% of women put the newborns to the breast within an hour of delivery, and the districts differed significantly in terms the odds of early initiation even after multivariate adjustment. Newborns in Lawra district were more often breastfed within an hour of delivery compared with children elsewhere in the region. Using Jirapa-Lambussie as the reference district, newborns in all other districts except Lawra were significantly less likely to have been put to the breast within an hour of birth. Among the other covariates for household child survival practices such as child characteristics, parental characteristics and household wealth, only household wealth remained significant after multivariate adjustment; mothers from wealthier households were significantly less likely to have initiated breastfeeding within an hour

of delivery. This household wealth-related finding differs sharply from the 2006 Ghana MICS finding that, breastfeeding initiation within 24 hours of birth increased with mothers' level of education and wealth across Ghana. The lack of the synergistic effect of wealth and education may be responsible for the absence of an association between wealth and breastfeeding initiation rate in rural Upper West Region.

Worldwide, in more than two-thirds of the 68 priority countries for the countdown to 2015, the median prevalence rate for breastfeeding initiation is 43% (Countdown Working Group, 2008); the same as in the Upper West Region according to the current study. However this rate is slightly lower than that reported in the Gambia (GBoS, 2007) but higher than the reported rate in Nigeria (NBS, 2007). The national average for Ghana according to the 2008 GDHS was 52%; with slightly higher urban prevalence with cofactors such as assistance at delivery and regional differences being recorded. Even though the breastfeeding initiation rate recorded in this study in the Upper West Region is lower than the national average (43% versus 52%), it is important to note that the 2008 GDHS acknowledges a higher rate for urban areas; the Upper West Region study was conducted only in the rural areas of the region and was focused on district differentials. The significant finding of the current study that children from wealthier households were less likely to benefit from early initiation of breastfeeding is in contrast to the assertion by Gwatkin and others (2007) that there is no association between breastfeeding and wealth in sub-Saharan Africa.

The World Fit For Children (WFFC) goal states that, the optimum breastfeeding household practice is for mothers to exclusively breastfeed children for six months and to continue breastfeeding for two years of age and beyond, while introducing safe,

appropriate and adequate complementary feeding at six months (UNICEF, 2007). Exclusive breastfeeding for infants aged 0-6 months has the potential to avert 13% all under-five deaths in developing countries, making it the most effective single preventive method of saving children's lives even in resource-constrained settings (Jones et al., 2003; Black et al., 2003, Lawn et al., 2005; Bhutta et al., 2008).

This study explored the practice of exclusive breastfeeding (EBF) for six (6) months; mothers were asked whether they fed the study child with breastmilk only for the first six months of life; analysis was undertaken for the youngest child who was older than six months. The EBF rate for the region was 23%, far less than the 63% recorded nationally by the 2008 GDHS or the 54% reported by the 2006 Ghana MICS. Even after multivariate adjustment, the district differentials in EBF rate for the Upper West Region remained statistically significant; when compared with Jirapa-Lambussie District, children in Sissala East, Sissala West, Wa East and Wa Municipal were significantly more likely to have been exclusively breastfed for the first six months of life, with the children in Wa Municipal being 16 times more likely. Covariates such child characteristics, parental characteristics and household wealth did not influence the EBF rate.

The 2008 GDHS also reports that the median duration of exclusive breastfeeding in Ghana does not differ much by background characteristics even though a slight decrease is observed with increasing level of maternal education and wealth. The 2007 Liberia DHS reports an EBF rate of 19% (children aged 4-5 months). In Ghana the mean duration did not vary much by region, maternal education or wealth. However data from southern Tanzania show that EBF was nearly twice as common among the

poorest households when compared with the wealthiest (Armstrong Schellenberg, 2008) and in Nigeria, the 2007 Nigeria MICS reports that children with mothers with lower levels of education are worse off as far EBF is concerned. The C-IMCI Baseline Survey of 2000 in Malawi recorded an EBF rate similar to that found by the current study in the Upper West Region; 25% versus 23% respectively. The WHO (2001a) asserted that EBF rates are low and that in some African countries the rate may be as low as 2%; similar to that recorded by this study in Wa West District (4%) and the 1% reported from Djibouti (Countdown Working group, 2008). Even though the reasons for the low uptake of exclusive breastfeeding may not be clear, cultural reasons may explain a big part of it.

Even though exclusive breastfeeding is a household practice that does not require contact with the formal health service some studies show that ANC attendance and place of delivery/attendant at delivery (Thulier & Mercer, 2009) influence EBF rates. However, there are contradictory findings with regards to the uniformity of the associations and the magnitude of the effects (Scott & Bins, 1999; Pascale, Laure & Enyong, 2007; Thulier & Mercer, 2009), suggesting that the context-specific issues may be important when trying to isolate characteristics and practices that may be amenable to interventions. This study in the Upper West Region found significant district differentials in ANC attendance rate for a minimum of four visits; after multivariate adjustment district effect, maternal age, mother's ability to read and write English, and household wealth remained significant predictors (data not shown). The rather mixed account of the relationship between EBF and background characteristics lends weight to the view of some scholars that sub-Saharan Africa is the only region where there are no clear wealth differentials in EBF rates (Trussell et al., 1998).

5.2.2 Appropriate complementary feeding for children aged 6-9 months

Children aged 6-9 months are considered well fed by Infant and Young Child Feeding (IYCF) standards if the children consume freshly prepared energy- and protein-rich complementary foods including milk products; foods from grains, roots and tubers; fruits and vegetables; eggs, meat and fish; beans, nuts and foods made with oil fat or butter, in addition to breastmilk. Children aged 6-9 months should receive foods other than breastmilk at least twice per day; infant and young child malnutrition is a common problem in many countries and in some places more than a third of the children are stunted (UNICEF, 2001). Malnutrition is reportedly associated with 54% of under-five deaths (Pelletier, Frongillo & Habicht, 1993; WHO, 2002; Bryce et al., 2003; WHO, 2005). Observational studies indicate that improved IYCF practices to prevent or treat malnutrition could save 800 000 lives per anum worldwide (WHO, 1998).

In the Upper West Region, the complementary feeding prevalence rate was 22%; lower than the rate reported for Ghana by the 2006 MICS and but similar to that reported by the 2008 GDHS. The children aged 6-9 months in the Jirapa-Lambussie District were more likely to receive appropriate complementary feeding compared with children in other districts. The children in Wa Municipal were the least likely to have been fed appropriately (5%). Background variables such mother's ability to read and write English and husband's age influenced appropriate complementary feeding even after multivariate adjustment. According to the 2006 Ghana MICS, 44% of infants aged 6-8 months (twice that in the Upper West Region) are fed adequately. The MICS reported similar covariates that influenced complementary feeding such maternal education; in findings again similar to the survey in Upper West Region, wealth did not show a clear relationship with appropriate complementary feeding. However the 2008 GDHS reports

that 28% of Ghanaian children aged 6-8 months are fed according to all three IYCF recommended practices; even though regional differences were recorded in prevalence, no clear picture was observed with reference to maternal education and wealth. Less than half of Gambian children aged 6-9 months receive breastmilk and solid or semi-solid foods. The Gambia 2007 MICS reports a similar finding to that in Ghana and the Upper West Region – maternal education influenced appropriate complementary feeding as mothers with at least secondary school education were more likely to practice this. A northward decline (regional differences) in the proportions of children appropriately fed at age 6-9 months is observed in Nigeria with 31% of such infants being adequately fed; in Nigeria, wealth and maternal education were positively related to adequate child feeding (NBS, 2007) as in Liberia (LISGIS/MoH and Social Welfare/NACP-Liberia/MH, 2008). With regards to timely and appropriate complementary feeding for children aged 6-9 months the picture is inconsistent as shown above; in regions with short breastfeeding duration, children from wealthier households go off breast milk earlier but do not benefit from the timely complementary feeding recommendations (Gwatkin et al., 2007), however the results of the current study after multivariate adjustment indicate that wealth is not significant in the practice of complementary feeding in the Upper West Region; covariates such as mother's ability to read and write English and her husband's age may be stronger predictors of complementary feeding.

5.3 HOUSEHOLD PRACTICES RELATED TO DISEASE PREVENTION IN CHILDREN UNDER-FIVE

5.3.1 Children sleep under an insecticide-treated mosquito net

Malaria is a huge public health burden causing about one million deaths annually among children under-five (WHO, 20002b) particularly among children in Africa where it is responsible for one-in-five deaths (WHO, 1994; WHO 2002b). The recommended practice is for children in malaria endemic countries to sleep under insecticide-treated bed nets. At universal coverage ITBNs can be expected to contribute to the prevention of under-five deaths (Browne 2001; Jones et al., 2003; Lengeler, 2004). Unfortunately not enough children in Africa sleep under an ITBN (Bryce et al., 2003; Countdown Working Group, 2008).

In the Upper West Region, two thirds of children under-five slept under an ITBN the night preceding the survey; the districts differed significantly, and the most protected children were most likely to live in Jirapa-Lambussie while the children in Sissala East were the least protected. This rate is much higher than the regional rate reported by the 2006 Ghana MICS (37%) and the 2008 GDHS (34%). The additional efforts by the Government of Ghana and health developments partners through various interventions are likely to explain the rapid increase in coverage. The districts in Upper West Region differed significantly in terms of ITBN coverage; when compared with Jirapa-Lambussie, children in all other districts were significantly less likely to have slept under an ITBN the night preceding the survey. Wealth was the only other covariate that showed significant association even after multivariate adjustment; children in wealthier households were less likely to have slept under an ITBN. The poorest households were located in Jirapa-Lambussie where the highest ITBN coverage was recorded. The 2008 GDHS found that sleeping under an ITBN decreased with child's age (GSS, 2007), was

more predominant in rural areas, had regional differentials and decreased with wealth; the last two findings confirm the findings of the survey in Upper West Region. The 2006 Ghana MICS also did not find a relationship between wealth and ITBN coverage even though education was related to ITBN use. The explanation for the wealth differential is difficult to fathom but may be, the wealthy in rural areas regard scaled-up interventions as handout to the poor. However, based on data from 21 MICS, Gwatkin and others (2007) report equity gaps for treated bed net use.

In Tanzania, Armstrong Schellenberg and others (2008) report an association between wealth and ITBN use; the use was 70%-80% lower in the poorest households when compared with the least poor. However, only one-in-ten children used a bed net that had ever been treated with insecticide. Even fewer children in Nigeria reportedly slept under an ITBN the night preceding the 2007 Nigeria MICS with slight gender disparity in favour of females, and higher use in urban areas compared with rural settings (NBS, 2007) In the Gambia, households in the national capital have the lowest proportion of ITBNs with children in rural areas nearly twice as likely as their urban counterparts, to use an ITBN (GBoS, 2007). The 2007 LDHS reports no difference in rural versus urban ownership of mosquito nets (any net) but an association between wealth and ownership was recorded (LISGIS/MoH and Social Welfare/NACP-Liberia/MI, 2008).

5.4 HOUSEHOLD PRACTICES RELATED TO THE MANAGEMENT OF COMMON CHILDHOOD ILLNESSES

5.4.1 Children with diarrhoea receive ORS and or appropriate home fluids

Four-out-of-ten diarrhoea-related global deaths occur in Africa; access to clean water and sanitation impact directly on diarrhoea (Franz & Friztroy, 2006). The World Fit for

Children (WFFC) goal calls for a reduction in the 2000 incidence of diarrhoea by 25%; it targets to reduce the diarrhoea-related death burden in children under-five by 50% by 2005 (UNICEF, 2007). Oral rehydration therapies - oral rehydration salts and or recommended homemade fluids (RHF) – can prevent death from watery diarrhoea in all but the most severe cases (WHO, 1999), and ORT at universal coverage could reduce under-five deaths by 15% (Jones et al., 2003).

In the current study in the Upper West Region, diarrhoea prevalence among children under-five was determined by asking whether any child under-five had had diarrhoea in the two weeks preceding the survey. The diarrhoea card used by CBAs in their health promotion activities was shown to mothers as part of the interview process. In the Upper West Region, 14% of children under-five had diarrhoea in the two weeks preceding the survey. The highest burden was recorded in the Wa West District where nearly one third of children had diarrhoea. The safest district for children was Jirapa-Lambussie even though the highest proportion of households in the lowest two quintiles is located here; less than one-in-ten children had diarrhoea. The districts differed significantly in the prevalence of diarrhoea. Access to improved water source was generally high across the region; except for Wa Municipal where access was 57%, the rest of the districts recorded rates higher than 87%. Access to improved toilet was very low across the region; only about one-in-ten households has access to improved toilet (sanitation) facilities. The relationship between access to improved sanitation and water, and diarrhoea prevalence was unclear. However there were significant differences across the districts (data not shown). The findings of the 2008 GDHS (diarrhoea prevalence of 20%), differ in that even though the relationship between prevalence and access to improved water was not clear, that for access to improved sanitation was

clear; the unclear sanitation relationship in the Upper West Region may be due to the fact that very few households have access to improved sanitation. Based on data from 52 developing countries collected between 1996 and 2002, Stallings (2004) reports higher diarrhoea prevalence (20%) for children under-three in sub-Saharan Africa and goes on to state that children from wealthier households and those with well-educated mothers are less likely to have diarrhoea; this is true for both urban and rural areas. Except in sub-Saharan Africa, Stallings (2004) did not report an association between diarrhoea prevalence and access to safe drinking water. The prevalence reported was not influenced by increments in birth order or birth intervals (Stallings, 2004). In Nigeria, the 2007 MICS reports 10% diarrhoea prevalence with higher rates in rural areas – lower than the finding in Upper West Region. The 2006 Ghana MICS recorded a national diarrhoea prevalence of 15% with a regional prevalence for the Upper West Region at 19% which compares favourably with 14% reported by the current study. Nationally the 2006 Ghana MICS reported regional differences with overall lower rates in southern Ghana when compared with northern Ghana.

Uncomplicated diarrhoea can be managed at home using ORT (oral rehydration salts and or recommended homemade fluids). UNICEF estimates that in 2000, 69% of diarrhoea cases were treated with oral rehydration therapies (UNICEF, 2005). For more than two decades, ORT has been the pillar of management programmes for childhood diarrhoeal diseases. Even though coverage still remains low, improvements have been recorded across developing countries (UNICEF, 2007). In the current study in the Upper West Region even though household use of ORT and ORS to manage childhood diarrhoea were assessed by asking mothers/caregivers what they used to manage diarrhoea, a mother' ability to correctly prepare a sachet of ORS is what is presented;

ORS preparation is used as proxy for ORS use. A mother's ability to correctly prepare a sachet of ORS is preferred because respondents could provide socially desirable answers to questions related to the home-based management of childhood diarrhoea. Additionally, a mother's ability to correctly prepare ORS is a strong indicator that the mother will correctly use ORS when she manages diarrhoea with ORS. Six (6) steps in the correct preparation of ORS were assessed and if a mother failed to perform even a single step correctly, she was deemed as to have been unable to prepare ORS. Across the region, about half of mothers were able to correctly prepare ORS; the most adept mothers were found in Lawra. Failure to wash hands with soap before ORS preparation was the single most failed step by mothers/caregivers in the Upper West Region. Even after multivariate adjustment, the districts differed significantly in mothers' ability to correctly prepare ORS. Mothers who could read and write English and who had husbands who could also read and write English were significantly more likely to have correctly prepared ORS; this finding is similar to that presented by the 2007 Nigeria MICS (NBS, 2007) but differs from the 2008 GDHS that did not find a clear relationship with education. However mothers/caregivers from wealthier homes and with older husbands were significantly less likely to have correctly prepared ORS; the wealth finding contrasts sharply with the 2007 Nigeria MICS, the 2000 Lesotho MICS and the 2008 GDHS findings. Interestingly, Gwatkin and others (2007) report that several DHS and MICS data show higher ORT use among the least poor. As stated before, the wealth factor in rural Upper West Region even though contrary to expectation, may be explained by the attitude of the rich to scaled-up interventions which they consider as pro-poor. Furthermore, the wealthier households may be able to quickly arrange to have a child with diarrhoea sent to a health facility or a chemical shop where the ORS preparation and use would take place therefore such households

may not find it necessary to have the skill of ORS preparation. Another interesting finding was that Wa West District which has the highest diarrhoea prevalence also reports the lowest rate of correct ORS preparation – a clear avenue for district-level intervention.

Several approaches appear to hold the answer to equity challenges; deployment of services and health personnel to areas where the need is greatest, task shifting, removal of financial barriers to access to services and conditional cash transfers have been cited (Barros et al., 2005; Lagarde, Haines & Palmer, 2007; Hosseinpoor et al., 2011).

The most interesting finding of this study was that household wealth appears to be driving poorer household childhood practices across the Upper West Region. This may sound surprising as in most regions of the world, health inequities and inequalities are explained by wealth and education level; wealthier households are more likely to benefit. While it may not be very clear why wealthier households do not practice best practices such bed net use, anecdotal evidence indicates that the wealthy consider scale-up interventions as interventions for the poor and hence are unlikely to patronize such interventions. The wealthy are likely to feel reluctant to be seen embracing interventions they regard as targeting the poor. Cultural and ethnic factors may also be involved as these are known affect practices such as early initiation of breastfeeding (Fabrega, 1972; Lesthaeghe, 1989; van de Walle & van de Walle, 1991, Hill et al., 2003).

Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter draws conclusions based on the results and discussion of these results. The conclusions are written with respect to the specific objectives that were set before the start of the study. The recommendations are based on the conclusions and seek to provide 'food for thought' to the district health administrations in the Upper West Region specifically and to the health districts in the rest of the country.

6.2 CONCLUSIONS

Over the past decade, a lot of progress has been made towards building a healthier world for children. Unfortunately however, many children continue to die needlessly in many parts of the world. Regardless of the countries in which children live, their parental socioeconomic status and level of education, sickness care takes place first in the home. When families and communities are able to give children the right type of care, it will make a significant difference in the child morbidity and mortality burden worldwide.

6.2.1 Breastfeeding practices

The prevalence rate for breastfeeding initiation in the Upper West Region is 43%; statistically significant differences between the districts were recorded. Above and beyond district differentials, a child's age, number of children of children under-five and wealth negatively influenced the breastfeeding initiation rate while mother and husband's abilities to read and write English were positively associated with this rate;

there are significant relationships between some demographic characteristics and the practice of the four core interventions studied. These district differentials and the influences of cofactors provide relevant input for district level action; innovative interventions could be developed to encourage the wealthy to practice early initiation of breastfeeding.

6.2.2 Appropriate complementary feeding practices

Twenty-two percent (22%) of children aged 6-9 months in the Upper West Region are properly fed; statistically significant district differentials remain after multivariate adjustment. Covariates such mother's ability to read and write English, and husband's age significantly influenced appropriate complementary feeding practices in the households of rural Upper West Region. District differentials suggest that a prototype intervention – a one size shoe fits all approach - to improve appropriate complementary feeding in the districts of the Upper West Region is unlikely to make important gains. Interventions to improve the practice of appropriate complementary feeding should be district-specific.

6.2.3 Children sleep under an insecticide-treated bed net

Two-thirds (68%) of children under-five in the Upper West Region slept under ITBNs; the districts differ significantly. Household wealth was the only other co-variable that influenced ITBN use; the wealthier households were significantly less likely to use ITBN. The finding about wealth is quite intriguing and should be further investigated.

6.2.4 Children with diarrhoea receive ORT

We used ORS preparation as proxy for ORS use and we report that 14% of mothers/caregivers correctly prepared ORS with significant district differentials. A

mother's and her husband's abilities to read and write English positively influenced correct ORS preparation while wealth and husband's age were negatively associated with correct ORS preparation at the household/family level.

In the Upper West Region, significant district differences exist in the coverage of the 4-core household practices documented to be capable of reducing the under-five death burden by 6%-15% individually at universal coverage. Cofactors over and above district differentials also influence the coverage of these household practices at the household/family level in the Upper West Region; wealth appears to be a paradoxical variable. In addition, qualitative data may be useful in understanding the beliefs and ideas of wealthier households as these households less frequently engage in some of the life saving practices for children under-five.

6.2.5 Areas for further research

The current study did not look at the relationship between the husband of the study mother and the index child. Future studies may look at the following: whether the husband being the father of the study child made any difference; access to and utilization of health care services; young and infant child feeding education, and cultural and ethnic practices. Additionally, it could be helpful to develop an index in the frame of the wealth index developed by Filmer & Pritchett (2001) to determine how much each district contributes to the regional under-five mortality burden using the four core interventions: breastfeeding, complementary feeding, insecticide-treated net and ORT.

6.3 RECOMMENDATIONS

6.3.1 The finding that significant district differentials exist in the coverage of the 4-core household practices studied has important implications for programming; the region could look at various options for mitigating these inequities. The RHA could look at providing extra support in terms of mentoring and coaching, adequate numbers of well-qualified staff, and equipment and logistics support for the poorer-performing districts. Additionally, an avenue could be created for experience-sharing by the districts so that the poorer-performing district could learn best practices from the better-performing districts with the view to improving coverage across the region. It could be helpful to undertake study tours of the better-performing districts to observe these best practices in order to adopt them based on district-specific settings for improved coverage to achieve MDG-4. Interventions such as C-IMCI have been documented to lead to important improvements in the household coverage levels for child survival practices in many settings including the Upper East Region of Ghana. C-IMCI seeks to promote coverage of household practices key for child survival, growth and development even in resource-constrained settings. The districts may consider implementing such interventions; it is recommended that a pilot approach is adopted with room for lesson learning to inform scale-up of such interventions.

6.3.2 In response to the unanticipated wealth-related findings, it is recommended that programmes for child survival at the district level may consider innovative approaches to encourage uptake by the wealthy; approaches such the use of 'champions' to promote uptake of best practices have been successful in many areas. The districts could identify such 'wealthy champions' in their communities, and in addition to the involvement of the 'champions' in routine advocacy interventions such as mass media campaigns,

posters and billboards, these 'champions' could actively participate in the biannual maternal and child health campaigns that the Ghana Health Service organizes across the nation. Additionally, household wealth could be explored more rigorously; districts may encourage public health nurses on routine outreach services, and community-based agents to use qualitative approaches designed to further explore the wealth dimension in rural Upper West Region. Questions such as: who are considered by the communities as the wealthy; how do the wealthy perceive public health interventions for child survival; what are the child health care seeking behaviours of wealthy and other issues could be considered. The findings are expected to contribute meaningfully to the discourse on the relationship between wealth and household practices.

6.3.3 Among the cofactors studied, some such as child characteristics and mother's ability to read and write English showed significant influences on the coverage of the four-core household practices. District-level interventions are expected to take cognizance of these relationships.

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APPENDIX

Appendix 1: Study questionnaire

UPPER WEST REGION C-IMCI BASELINE SURVEY QUESTIONNAIRE

GHS-UWR/KNUST/UNICEF-GHANA

Sub-district_____
HHCODE_____

Community_____ **INTERVIEWER** _____

Date_____

HOUSEHOLD QUESTIONNAIRE

I am from the Ghana Health Service we are working on a project concerned with child health, particularly for those children who are less than five years of age. We would like to talk with you about this. If you (or the primary caregiver) have time, the interview will take about one hour.

If there is agreement proceed. If not, ask the person you are speaking with whether another time would be better. Make note of the suggested time and move to the next household. Check with supervisor on whether to return to that household.

Answer each question. Put NA for NOT APPLICABLE answers

1. Who is the head of this household?

(Name) _____

(Enter the right answer in the box to your right for the rest of the questions)

2. Are you a single parent? YES = 1 NO = 0
[ ]

***If she is married, indicate 1 in Q3 below without asking the Q3**

3. (Get the sex of the head of household) Sex Male = 1 Female = 2
[ ]

4. Age of the husband or household head (in years):
[ ]

Less than 18 = 1 19 - 24 = 2 25 – 34 = 3

35 – 44 = 4 45 – 54 = 5 55+ = 6

5. Can the head of household/husband read and write? YES = 1 NO = 0
[ ]

Give the respondent the breastfeeding sentence to read and write

***If No, do not ask Q6 but circle 0 = no education**

6. Which class did head/husband reach at school?
[ ]

0. No education 1 Adult literacy

2. Class 1 to 3 3 Class 4 to 6

4. Secondary School 5 Polytechnic/University +

7. (For single parents only). Can you tell why you are single now?
[ ]

1. Widowed 2. Divorced

3. Separated 4. Father away but supports

5. Never married 6. Father away, does not support

***If she is the head of the household, go to Q 11**

8. What is your age in years (mother/caregiver)?
[ ]

Less than 18 = 1 19 – 24 = 2 25 – 34 = 3

35 – 44 = 4 45 – 55 = 5 55+ = 6

9. Can you read and write? YES = 1 NO = 2
[ ]

***If No, do not ask Q 10 but circle 0 = no education**

10. Which class did you reach at school?
[ ]

0. No education 1. Adult Literacy

2. Class 1 to 3 3. Class 4 to 6

4. Secondary School 5. Polytechnic +

11. List here starting with the youngest one, all the children under five from this mother:

NAME	AGE (months)	SEX (M/F)

12. Do you own any of the following?

Socio-economic indicators	Yes	No
Radio in household		
Sleeps in Bed		
Sleeps in ITNs		
Sleeps on floor		
Access to Latrine at home		
Goats/Sheep in house		
Chickens in household		
Motorbike in household		
Bicycle in household		
Number of inhabitants per room		
Aluminum roof		

ENTER ONLY NAMES OF CHILDREN WITH ANY ILLNESS DURING THE PAST 2 WEEKS

Do not read proposed answers unless instructed to do so. Prompt for all possible answers and record multiple answers. From Q 1 to Q 32 inclusive, enter the answer under the child's column.

*** DK = Don't Know**

No.	Question	Child's Name		
	ENTER CHILD'S NAME			
1. P MICS MCE	In the past 2 weeks has any child had any illness or health problems? YES = 1 NO = 0 DK = 2 ***If NO or DON"T KNOW, go to Q3**			
2.	For how many days has (mention child's name) been ill? No. of days__/___/_____ DK = 2			
3.	Please tell me all the symptoms or illnesses that (child's name)			

	had in the past 2 weeks, including today. A. Fever B. Malaria C. Convulsions D. Unconscious E. Swollen abdomen F. Cough G. Difficult breathing H. Fast breathing I. Diarrhoea J. Blood in stool K. Soft or watery stool L. Generalized skin rash M. Redness of eyes N. Refusal to eat or breastfeed O. Runny nose P. Swollen limbs Q. Pneumonia R. Vomits everything S. Unable to drink T. Other (name)			
4.	*** If no fast breathing, go to Q4 B. Else when (child's name) was ill, was the fast breathing or difficult breathing due to a blocked nose?** YES = 1 NO = 0 DK = 2			
4B	**FOR CHILDREN WITH DIARRHOEA ONLY. IF NO DIARRHOEA GO TO Q8 B**			
5.	During this last episode of diarrhoea, what are all the drinks that (child's name) has taken? 1. Breast milk 2. Cereal-based fluids (soup, porridge, rice water) 3. Other locally defined acceptable home fluids (yoghourt, drink, tea, coconut, cocoa) 4. ORS 5. Other milk or infant formula 6. Water with feeding during some part of the day 7. Water alone 8. Other defined 'unacceptable' fluids but no feeding (soft drinks)			

	9. Nothing 10. Other (name)			
	Child's Name			
6.	During (child's name)'s illness, did s/he drink much less, about the same or more fluids than usual? Much less = 0 About the same = 1 More = 2 DK = 8			
7.	During (Name)'s illness did s/he eat much less, about the same or more food than usual? Much less = 0 About the same = 1 More = 2 DK = 8			
8.	In your opinion was (Name)'s illness mild, moderate or severe? Mild = 0 Moderate = 1 Severe = 2 DK = 8			
8B	**Note: if malaria or fever was mentioned in Q4 ask the following question or else go to Q15**			
9.	Was (Name) taken to a health facility or drugstore/chemical store when s/he had malaria or fever? Health facility = 1 Drugstore = 2 None = 0 ***If none, go to Q13**			
10.	Did (Name) take medicine for fever or malaria that was provided or prescribed at the health facility or drugstore? YES = 1 NO = 0 DK = 2			

	***If NO or DK go to Q12**			
11.	What medicine did (Name) take that was provided or prescribed at the health facility or drugstore? ***For paracetamol and chloroquine enter 2 if DK number of days**			
	Paracetamol (Enter number of days taken, 0 if not taken)			
	Fansidar (Enter 1 if taken, 0 if not and 8 if DK)			
	Chloroquine (Enter number of days taken, 0 if not taken)			
	ACT (Enter number of days taken, enter 0 if not taken)			
	Quinine (Enter 1 if taken, 0 if not, 8 if DK)			
	Other (Enter 1 if taken, 0 if not, 8 if DK)			
	Does not know (Enter 1 if all above = 8, else enter 0)			
12.	Was (Name) given medicine for the fever or malaria before being taken to the health facility or drug/chemical store? YES = 1 NO = 0 DK = 2 ***If YES go to Q13, if NO go to Q15**			
13.	Was (Name) given medicine for the fever or malaria during this illness? YES =1 NO = 0 DK = 2			
14.	What medicine did (Name) take? ***If DK enter 8**			
	Paracetamol (Enter number of days taken, 0 if not taken)			
	Fansidar (Enter 1 if taken, 0 if not and 8 if DK)			
	Chloroquine (Enter number of days taken, 0 if not taken)			
	ACT (Enter number of days taken, 0 if not taken)			
	Quinine (Enter 1 if taken, 0 if not, 8 if DK)			
	Other (Enter 1 if taken, 0 if not, 8 if DK)			
	Does not know (Enter 1 if all above = 8)			

	ENTER CHILD'S NAME			
15.	*** If child was taken to hospital , input 1 and go to Q 16, if not, then ask the following question**			
	Did you seek advice or treatment for (child's name)'s illness outside the home? YES = 1 NO = 0 DK = 2 *** If NO or DK go to Q 13**			
16.	Where or from whom did you seek help?			
	Formal Health System	Non-formal Health System		
	A. Government facility	F. Chemical shop		
	B. Private Clinic	G. Market Stall		
	C. Midwife	H. Relative/Friend/Elder		
	D. Pharmacy	I. Traditional Healer		
	E. Other	J. Other		
If more than one provider was mentioned ask Questions 17 to 19. If one provider A, B or C go to Q 20, for other go to Q 32.				
17. .	Which provider did you go to go first after (child's name) became ill?			
	Formal Health System	In-formal Health System		
	A. Government facility	F. Chemical shop		
	B. Private Clinic	G. Market Stall		
	C. Midwife	H. Relative/Friend/Elder		
	D. Pharmacy	I. Traditional Healer		
	E. Other	J. Other		
18.	Which provider did go to next?			
	Formal Health System	In-formal Health System		
	A. Government facility	F. Chemical shop		

	B. Private Clinic	G. Market Stall			
	C. Midwife	H. Relative/Friend/Elder			
	D. Pharmacy	I. Traditional Healer			
	E. Other	J. Other			
19.	Why did you decide to go another provider?				
	A. Child was not cured or not satisfied with treatment				
	B. Referred by health facility				
	C. Medication was too expensive				
	D. Instructions for treatment were difficult to follow				
	E. Not satisfied with the way we were treated				
	F. Other				
*For children who were taken to a health facility					
20.	What made you decide to take (child's name) to a health facility?				
	A. Child's health condition worsened				
	B. Family member advised				
	C. Advised by health facility staff				
	D. Other				

	CHILD'S NAME			
21.	How much time passed between when you first recognized that (child's name) was ill and when you took him/her to the health facility? **Number of days_____ Enter 2 if can't remember**			
22.	Did the health worker ask you to bring (child's name) back for a follow-up in a few days? YES = 1 NO = 0 Can't remember = 2 ***If NO go to Q 24**			
23.	Did you bring (child's name) back to the health facility for a follow-up visit?			

	YES = 1 NO = 0 Can't remember = 2 ***If YES go to Q 25**			
24.	What prevented you from taking (child's name) for a follow-up visit?			
	A. Could not afford the additional cost B. Did not have time C. Other household members disagreed D. Did not believe that referral was necessary E. Intends to go next time F. Child got well before referral was required G. Other			
25.	Did the health worker say your child has to be taken to another hospital or any other health centre? YES = 1 NO = 0 Can't remember = 2			
26.	Why was the referral necessary? A. Shortage of drugs B. Shortage of staff C. Proximity to home D. Better equipped facility E. Other E. DK			
27.	Were you able to comply? YES = 1 No = 0 ***If YES go to Q 29**			
28.	What prevented you from taking the child for a referral?			
	A. Could not afford additional cost B. Did not have time C. Other household members disagreed D. Did not believe referral was necessary E. Intends to do so next time F. Child got well before referral was required G. Other			

29.	When (child's name) fell ill and was taken to the health facility, who decided that s/he should seek such treatment?			
	A. Child's mother F. Community health worker B. Child's father G. Doctor C. Child's mother and father H. Nurse D. Other relative I. Other E. Community member J. Assemblyman/woman			

	CHILD'S NAME			
30.	Who took (child's name) to the health facility?			
	A. Child's mother E. Community Health Worker B. Child's father F. Community member C. Child's mother and father G. Other relative D. Other H. Assemblyman/woman			
31.	When (child's name) fell ill and you decided to take him/her to the health facility, how much did you spend for everything? Total amount_____ Free = 0			
32.	Were you able to pay the full cost involved with your child's health care? YES = 1 NO = 0			
FROM HERE (Q 33 to Q51), DATA WILL APPLY TO THE WHOLE HOUSEHOLD				
33.	When you take a sick child to a health facility, how far must you travel to reach it? Not far/near = 0 A bit far = 1 Far = 2 Never take the child to a health facility = 3 ***If answer is 0 or 3 go to Q 35**			
34.	If the above facility is not the closest to your house, then how far is the nearest health facility to your house? Not far/near = 0 A bit far = 1 Far = 2 It is the nearest health facility = 3			
35.	What are the benefits of seeking treatment from a chemical shop/seller?			
	A. Save time/near the house B. Medicines are always there			

	C. Can get medicine on credit D. Don't know E. Low cost of drugs F. Other	
36.	In general, how would you describe the benefits of seeking treatment at the health facility?	
	A. Free medication D. Treatment is successful B. Individual/personal attention E. Other F. DK	
37.	How would you describe the quality of care your sick child receives from the health facility? Very good = 1 Good = 2 Fair = 3 Bad = 0	
38.	What would you like to see improved?	
	A. Atmosphere (friendly, respectful, minimal waiting time) B. Adequate and appropriate drug supply C. Proper and easy-to-follow instructions D. Minimal waiting time E. Other F. DK	

39.	What are some of the factors that might discourage you from seeking treatment for an ill child from a health facility?	
	A. Financial cost B. Quality of care is less than satisfactory C. Lack of drugs in the health facility D. Time away from work F. Competing needs within the household G. Distance H. Lack of decision-making capacity with regards to seeking treatment for child I. Other	
40.	Do you feel that health workers at the health facility treat you and your children with respect? Always = 1 Usually = 2 Sometimes = 3 NO = 0	
41.	What are the available channels to communicate your complaint about a health worker?	
	A. Village Committee members on health facility board B. Politicians C. Religious leaders D. Traditional leaders E. Other F. None G.DK	

	***IF NONE/DK go to Q 44**	
42.	Which of these have you ever used?	
	A. Village Committee members on health facility board B. Politicians C. Religious leaders D. Traditional leaders E. Other F. None *** IF NONE, GO TO Q 44**	
43.	Are you satisfied with the way your complaints are handled by these channels? YES = 1 USUALLY = 2 SOMETIMES = 3 NO = 0	
44.	When a health worker communicates health and medication instructions to you, do you find them easy to understand and follow? YES = 1 USUALLY = 2 SOMETIMES = 3 NO = 0 ***IF YES, GO TO Q 46**	
45.	What are the difficulties involved in either understanding or following such instructions?	
	A. Language/literacy problems B. Confusion C. Instructions communicated too fast D. Too much information E. Too many other concerns/pre-occupied F. Other	
46.	Are there some illnesses or conditions that you think might be better managed by others not associated with a health facility? YES = 1 NO = 0 DON'T KNOW = 2 *** If NO or DK, go to Q 48**	
47.	What do you thin these illnesses or conditions might be?	
	A. Flu, common cold, catarrh H. Diarrhoea B. Anaemia I. Convulsions C. Eye infection J. Malaria D. Ear infection K. Blood in stool E. Fever L. Malnutrition F. Cough/fast breathing M. Unconsciousness N. Other	

48.	Is there someone in the community who is regularly consulted with regard to childhood illness? YES = 1 NO = 0 DON'T KNOW = 2 ***If DON'T KNOW or NO go to Q 50**	
49.	Who is this person?	
	A. Medical doctor D. Community health worker B. Religious leader E. Traditional healer C. TBA F. Other (name)	
50.	When should you take a child to a health facility right away?	
	A. Child unconscious B. Child unable to drink or breastfeed C. Child's condition becomes worse D. Child develops a fever E. Child has fast breathing/cough F. Child has blood in stool G. Child vomits everything H. Child convulses I. Never take the child to a health facility J. Other K. DK ***IF ANY REPLY FROM A to H THEN GO TO BREASTFEEDING MODULE ON NEXT PAGE**	
51.	Why don't you take your child to the health facility?	
	A. No health facility nearby B. Religious faith C. Can't afford the cost D. Previous negative experience E. Other	

BREASTFEEDING MODULE: FOR CHILDREN 0 TO 2 YEARS ONLY **DO NOT READ PROPOSED RESPONSES, ENTER EACH ANSWER UNDER CHILD'S NAME**				
	ENTER CHILD'S NAME			
1.	Has (child's name) ever been breastfed? YES = 1 NO = 0 DK = 2 ***IF NO go to Q 13**			
2.	How long after birth did you put (child's name) to the breast? Within first hour = 1 Within 8 hours =2 After 8 hours = 3			
3.	Within the first three days after delivery, did you continue to feed (child's name) the fluid that came from your breast? YES = 1 NO = 0 DK = 2			
4.	At what age did you introduce other food or drinks to			

	(child's name) in addition to breast milk? Age in months_____ ***IF age was above 6 months go to Q 6**			
5.	What were the reasons? A. Mother was/is pregnant E. Mother was/is working B. Mother died F. Child loosing weight C. Child crying and reaching out for food D. Mother was/is in poor health G. DK			
6a.	Is (child's name) still being breastfed? YES =1 No = 0 DK = 2			
6b.	How long did you give only breastmilk to (child's name)?___			
ASK THE MOTHER TO BREASTFEED AND LOOK FOR THE FOLLOWING SIGNS				
7.	Baby positioning: 1. Mother relaxed and comfortable YES = 1 NO = 0 2. Baby's body close to mother's YES = 1 NO = 0 3. Baby's body facing the breast YES = 1 NO = 0 4. Baby body and head straight and well supported YES = 1 NO = 0 5. Baby's chin touching the breast YES = 1 NO = 0			
8.	Baby's attachment: 1. Baby's mouth wide open YES = 1 NO = 0 2. Lower lip turned outward YES = 1 NO = 0 3. More areola above baby's mouth YES = 1 NO = 0 4. Baby calm and alert YES =1 NO = 0			
9.	Record who ends breastfeeding: Mother = 0 Child = 1			
10.	How often do you feed your child? Number of times_____			

	ENTER EACH CHILD'S NAME		
11.	Since this time yesterday has (child's name) been given anything to drink from a feeding bottle? YES = 1 NO = 0 DK = 2		
12.	What other food and or drinks do you give to your children in addition to beast milk? (give frequency for each child)		

	A. Fruit and juice or mashed fruit and vegetables B. Plain water C. Sweetened or flavoured water, or plain tea, or glucose or Milo D. Milk (cow milk or tinned milk) E. Plain porridge F. Enriched porridge (with beans, soya bean, fish, groundnuts) G. Other		
13.	Has (child's name) ever been given breast milk substitute? YES = 1 NO = 0 DK = 2 ***If NO, DON'T KNOW, go to NUTRITION MODULE (1) on next page**		
14.	What were the reasons?		
	A. Mother did/does not have enough milk B. Mother not ale to breastfeed due to cracked or sore nipples C. Mother was/is in poor health D. Protection form HIV/AIDS E. Mother was/is pregnant F. Mother was/is working G. Mother died H. Age of child was greater than 6 months I. Other J. DK ***If BIOLOGICAL MOTHER NOT AVAILABLE GO TO NUTRITION MODULE (1) ON NEXT PAGE**		

15.	Did anyone encourage you to provide a substitute for breast milk to (child's name)? YES = 1 NO = 0 CAN'T REMEMBER = 2 ***If answer IS NO/CAN'T REMEMBER, go to NUTRITION MODULE (1) on next page**		
16.	Who encouraged you to do so?		

	A. Husband B. Mother C. Mother-in-law D. Other family member E. Doctor or other health provider F. Community Health worker G. Traditional healer H. Neighbour/friend I. Media (radio, television, newspaper) J. Other K. Nobody		

NUTRITION MODULE (1) **DO NOT READ PROPOSED RESPONSES, ENTER EACH ANSWER UNDER EACH CHILD'S NAME**						
1.	Could you tell us what (child's name) ate and how many times in the last 24 hours?					
	1. Breast milk: number of times_____					
	2. Milk products					
	3. Dark Green Leaf: Aleefu Cassava leaves	Fresh	Plain			
			Oil			
			Flour			
		Dried	Plain			
			Oil			
			Flour			
	4. Green vegetables:	Fresh	Plain			
			Oil			
			Flour			
		Dried	Plain			
			Oil			
			Flour			
	5. A. Tomato fresh B. Tomato added to food C. Tomato with flour					
	6. A. Orange B. pineapple C. Apple D. Mango E. paw-paw, F. Carrots G. Banana H. Wild fruit I. Other					

	7. Oil rich foods: A. Margarine B. Butter C. Groundnut oil D. Palm oil E. Shea butter oil F. Other			
	8. Cereals: A. Rice B. Corn C. Sorghum D. Millet E. Guinea corn F. Wheat G. Other			
	9. Protein: A. Egg B. Meat C. Fish D. Soya bean E. Ground nut F. Beans G. Other			
2.	How do you preserve fruits and vegetables?			
	A. Direct sun dry B. Dry in shed C. Dry in solar dryer D. Boil and sun dry E. Refrigerator F. Other			
3.	Has anyone ever had a discussion with you about the nutritional requirements of your child/children? YES = 1 NO = 0 CAN'T REMEMBER = 2 ***IF CAN'T REMEMBER OR NO, go to Q 6**			
	ENTER EACH CHILD'S NAME			
4.	Who as spoken to you about the nutritional requirement of your child/children?			
	A. Health workers D. Community volunteers B. Agric extension workers E. Media (radio, TV, press) C. Relatives F. Others			
5.	Do you know or remember what was said about feeding a child?			
	A. The importance of breastfeeding B. Introducing complimentary foods C. Frequency of feeding D. Avoiding water and or other fluids before six months E. Avoiding bottle feeding F. Other			
6.	Is the child health record book or any document with immunization records available? Available = 1 Not available = 0 ***IF NOT AVAILABLE go to Q 8**			

7.	Date Vitamin A received for each child: A. Before Jan 2006 B. After Jan 2006 ***IF NO RECORDS AVAILABLE ON CARD GO TO Q 10**			
*** Ask the next 2 questions only if information was not available on the health card or caregiver does not have such a card**				
8.	Has (child's name) ever received a Vitamin A capsule like this one? YES =1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2 ***If NO or CAN"T REMEMBER go to Q 11**			
9.	How many months ago did (child's name) take the last dose? Period in months_____			
10.	On what occasion did (child's name) receive this last dose?			
	A. Visit to child welfare clinic B. Sick child visit to health facility C. National immunization day D. Other E. Don't know			
11.	What is the importance of Vitamin A to a child's health?			
	A. Prevents diseases B. Helps child to grow properly C. Ensures good eye sight D. Others E. Don't know			

IMMUNIZATION MODULE

	ENTER EACH CHILD'S NAME			
1.	**If Child Health Records document not available go to Q 3** **If available, indicate doses correctly received.** **Enter 1 if child has received the specified dose on time, 0 if not**			
	BCG			
	OPV 0			
	OPV 1			
	OPV 2			
	OPV 3			
	PENTA 1			
	PENTA 2			
	PENTA 3			
	Measles			
	Yellow fever			
2.	Was immunization completed in first year?			

	YES = 1 NO = 2 *** If vaccinations have been recorded, move to NUTRITION MODULE (2)**			
3.	Has (child's name) been given a BCG vaccination against tuberculosis? YES = 1 NO = 0 DON'T KNOW/CAN"T REMEMBER = 2			
4.	*** Inspect shoulder of each child less than five years for BCG scar and register the information under that child's name.** Would you mind if we checked (child's name) to see whether there is an immunization scar? Present = 1 Absent = 0 Not examined = 2			
5.	Has (child's name) ever been given 'vaccination injections' on the upper arm to prevent him/her from getting tetanus, whooping cough and diphtheria? YES = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2 ***If answer is YES go to Q 7**			
6.	How many injections has (child's name had)? *** Enter number of injections under each child's name.** Can't remember/Don't know = 2			
7.	Has (child's name) ever been given vaccination drops in the mouth to protect her/him from getting polio? YES = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2 ***If answer is YES go to Q 10**			
8.	How old in months was (child's name) when the first dose of polio drops were given? Age in months_____ Can't remember/Don't know = 2			
9.	How many times was (child's name) given polio drops? Number of times_____ Can't remember/Don't know = 2			
10.	Has (child's name) ever been given a vaccination injection that is, a shot in the arm at the age of 9 months or more to prevent him/her from getting measles? YES = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2			
11.	Has (child's name) ever been vaccinated during a National			

	Immunization Day? YES = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2			

NUTRITION MODULE (2)

	ENTER EACH CHILD"S NAME			
1.	Which foods can give Vitamin A?			
	A.Cabbage leaves B. Cassava leaves C. Mango D. Paw-paw E. *'Aleefu'* F. Liver G. Small fish (Keta school boys) H. Egg I. Meat J. Oily foods K. Milk L. Carrots M. Other N. DK			
2.	How do you usually cook vegetables?			
	A. Plain B. With oil C. With flour D. Other			
3.	Is it good nutrition to add oil rich foods to vegetables?			
	YES = 1 NO = 0 Don't know = 2			
4.	What is the source of vegetable consumed in this house?			
	A. All grown in the house B. Partly grown/partly purchased C. All purchased			
5.	What types of crops do you grow?			
	A. Cereals B. Vegetables C. Fruits D. Legumes I. Tubers L. Other E. Tobacco F. Coffee G. Soya bean H. Cotton K. Roots			
6.	What type of livestock/birds do you keep?			
	A. Guinea fowls B. Local fowls C. Goats D. Turkeys I. Poultry fowls E. Rabbits F. Cattle G. Sheep H. Pigs			
7.	Does (child's name) have any problem with seeing when it is dark? YES = 1 NO = 0 Don't know = 2			
8.	Who usually supervises the care of (child's name) during the day?			

	Close relatives;	Other people:			
	A. Mother	F. Person 60 years +			
	B. Father	G. Person 13 – 50 years			
	C. Father and mother	H. Person less 8 – 12 years			
	D. Grandparents	I. Person less than 8 years			
	E. Siblings	J. Self			
9.	Who usually feeds (child's name)?				
	Close relatives:	Other people:			
	A. Mother B. Father C. Father and mother D. Grandparents E. Siblings	F. Person 60 years + G. Person 13 – 50 years H. Person less 8 – 12 years I. Person less than 8 years J. Self			
10.	What utensils are usually used in when feeding (child's name)? A. Bottle with teat B. Cup/plate with spoon C. Other				
11.	Does (child's name) eat in an individual or communal plate? Individual = 1 Communal = 0				
12.	Do you or other caregivers usually sit with (child's name) when feeding? YES =1 NO = 0				
13.	How do you ensure that (child's name) eats enough?				
	A. Offering more food when child shows signs of hunger. B. Talking with child during the meal C. Allowing the child to eat at his/her own pace. D. Other				
14.	How many meals and snacks does (child's name) usually take per day? A. Number of meals_____ B. Number of snacks_____				
15.	When (child's name) refuses to eat, how is s/he persuaded to eat?				
	A. Offering reward such as toffees after eating the food B. Following the child around while urging him/her to take one more bite C. Feeding the child among other children using individual plate D. Praising the child for eating the food E. Giving the child little amounts of nutritious food at frequent intervals F. Scolding the child G. Slapping/pinching the child H. Leaving the child till s/he is hungry or cries for food				

	I. Singing to the child J. Other				
16.	Who usually prepares food for (child's name)?				
	Close relatives:	Other people:			
	A. Mother B. Father C. Father and mother D. Grandparents E. Siblings	F. Person 60 years + G. Person 13 – 50 years H. Person less 8 – 12 years I. Person less than 8 years J. Self			
17.	Who usually takes (child's name) to hospital when sick?				
	Close relatives:	Other people:			
	A. Mother B. Father C. Father and mother D. Grandparents E. Siblings	F. Person 60 years + G. Person 13 – 50 years H. Person less 8 – 12 years I. Person less than 8 years J. Self			
18.	Who usually administers treatment when (child's name) is ill?				
	A. Mother B. Father C. Father and mother D. Grandparents E. Siblings	F. Person 60 years + G. Person 13 – 50 years H. Person less 8 – 12 years I. Person less than 8 years J. Self			
19.	Who usually cleans (child's name) after defecation?				
	A. Mother B. Father C. Father and mother D. Grandparents E. Siblings	F. Person 60 years + G. Person 13 – 50 years H. Person less 8 – 12 years I. Person less than 8 years J. Self			
20.	Does (child's name) sleep alone on a bed/mat at night? YES = 1 NO = 2				
21.	With whom did (child's name) sleep last night?				
	A. Mother B. Mother and Father C. Person 60+ D. Person 8 – 12 years	E. Father F. Grandparents G. Person 13 -59 years H. Person less than 8 years			
22.	What household chores do you assign to (child's name)?				
	A. Drawing water from source B. Bathing siblings C. Feeding siblings D. Cooking for siblings E. Send child to do something	F. Washing utensils G. Sweeping H. Nothing I. Others			

MALARIA PREVENTION MODULE

	ENTER EACH CHILD"S NAME			
1.	Do you have mosquito nets in this house? YES = 1 NO = 0 ***If YES go to Q 3**			
2.	Why? A. Don't know about it B. Mosquito nets are not available in this community C. Can't afford D. Don't like it E. Not useful F. Other G. Don't know H. No response			
3.	How many mosquito nets are there in this house? Number of nets _____			
4.	Where did you buy the mosquito net? A. Shop B. Health facility C. Community Heath Worker D. Community Leader E. Other			
5.	Did (child's name) sleep under a mosquito net last night? YES = 1 NO = 0 DON"T KNOW = 2			
6.	List all those who use mosquito net in his house: A. Father D. Above 5 B. Under 5 E. Other C. Mother F. None			
7.	Why do you use a mosquito net? A. To avoid mosquitoes B. To avoid other insects C. To prevent malaria D. Other E. Don't know			
8.	How did you know about the mosquito net? A. Radio E. Health workers B. Friends F. Relatives C. Community Worker G. Other D. NGO			
9.	Was the net used by (child's name) ever treated with a product to kill mosquitoes? YES = 1 NO = 0 CAN"T REMEMBER/DON"T			

	KNOW = 2 ***If answer is NO go to Q 11** **If answer is CAN'T REMEMBER/DK go to Q 12**			
	ENTER EACH CHILD"S NAME			
10.	When was the mosquito net used by (child's name) last treated? Less than 6 months = 1 More than 6 months = 0 Don't know/can't remember = 2 **If CAN'T REMEMBER Go to Q 12**			
11.	Can you tell us why that mosquito net was not treated? A. Tablets/drug for treatment not available B. Cannot afford C. Do not believe in value of treated nets D. Don't know E. Other			
12.	What is the advantage of treated mosquito nets over non-treated? A. Treated nets kill mosquitoes B. Avoid mosquito better C. Avoid other insects D. Prevent malaria E. Repel mosquitoes F. Other G. None H. Don't know			
13.	In the last two weeks, were there any other mosquito repellants or insecticides used in this household? YES = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2 ***If NO/CAN"T REMEMBER go to Maternal Care module on next page**			
14.	Which repellants or insecticides were used? A. Mosquito repellant spray B. Mosquito repellant cream C. Mosquito coil D. Smoke E. Other			

MATERNAL CARE MODULE

1.	With your previous pregnancy, did you go for antenatal care (ANC)? YES = 1 NO = 0 ***If NO go to Q 7**	
2.	At what month of pregnancy did you start the antenatal clinic? Month_____	
3.	Where did you go for antenatal care?	
	A. Hospital/Health Centre D. TBA (trained) B. Mobile/Outreach Clinic E. TBA (untrained) C. Traditional healer F. Other	
4.	Whom did you see?	
	A. Doctor/Nurse/MA/Midwife E. Other community volunteer B. Health Aid/Ward Assistant F. Traditional healer C. TBA (trained) G. Relative D. TBA (untrained) H. Other	
5.	During last pregnancy, was any of the following done at least once (Read the all the questions to the woman)? **If response is YES enter 1 if NO enter 0 if CAN'T REMEMBER enter 2**	
	Were you weighed?	
	Was your height measured?	
	Was your blood pressure measured?	
	Did you give a urine sample?	
	Did you give a blood sample?	
	Did you receive SP under DOT?	
	Did you receive iron tablets?	
	Did you receive a dewormer?	
	Did you receive Vitamin A (show capsules) within two months after delivery?	
	Was your abdomen examined?	
6.	How many times did you visit antenatal clinic or TBA (trained) during the last pregnancy? Number of times_____ Can't remember = 2	
7.	At which month of pregnancy do you think you are supposed to start antenatal clinic?	
	A. 0 to 3 months C. 4 to 6 months B. 7 to 9 months D. Don't know	
8.	Have you heard about the signs of pregnancy complications? YES = 1 NO = 0 CAN"T REMEMBER = 2 ***If NO, CAN"T REMEMBER, go to Q 12**	
9.	Please mention 3 of the complications you can remember.	
	A. High blood pressure G. Pre-eclampsia M. Ectopic B. Bleeding H. Abortion C. Infections I. Anaemia D. Malpresentations J. Obstructions E. Prolonged labour K. Malnutrition	

	F. Medical diseases L. Raptured uterus	
10.	Name the sources from which you got this information.	
	A. Radio E. Health personnel B. TBA F. Agric extension worker C. Relatives G. NGOs D. Other I. Friends	
11.	Were you told where to go for help if you had any of these complications? Yes = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2	
12.	Where did you give birth?	
	A. Home D. On the way to the delivery place B. TBA (trained) E. Hospital/health centre C. TBA (untrained) F. Other	
13.	How far did you travel to reach the place where you last delivered? Short distance = 1 Not so far = 2 Far = 3	
14.	Was it easy to get transport to go the place where you delivered? YES =1 NO = 0 WAS NOT NEEDED = 2 ***If NOT NEEDED go to Q 18**	
15.	Did someone help you in arranging transportation? YES = 1 NO = 0 **If NO, go to Q 17**	
16.	Who helped you (multiple answers possible)?	
	A. Husband D. TBA G. Community volunteer B. Community leaders E. Neighbours H. other C. Relatives F. Health worker	
17.	Which means of transport of transport did you use?	
	A. Ambulance D. private vehicle G. Bicycle B. Community-arranged vehicle E. Bicycle ambulance H. Ox chart C. Commercial public transport F. Walking I. Other J. Donkey chart	
18.	Do you have a Maternal Health Record Book? (Show the example) YES (seen) = 1 NO = 0 YES (not seen) = 2 ***If YES (seen) enter number of TT doses from document in lower box** **Then go to Q 22**	
19.	When you were pregnant with your last child, did you receive a tetanus (TT) injection? YES = 1 NO = 0 CAN"T REMEMBER/DON"T KNOW = 2 ***If NO, go to Q 22**	
20.	How many doses of TT did you receive during your last pregnancy?	

	Number of doses _____ CAN"T REMEMBER/DON"T KNOW = 2	

21.	When was the last dose received? A. 1 month ago B. 1 year ago C. Years ago D. Can't remember E. Other	
22.	How many doses do you think you should receive in total to be protected against tetanus? Number of doses_____ DON"T KNOW = 2	
23.	During your last pregnancy and if possible during lactation, **(Read each item aloud and indicate 1 for YES and 0 for any other response)**	
	Did you live with your husband?	
	Did your husband assist you with home and or child care when you were together?	
	Did your husband encourage you to eat more nutritional food than you usually eat?	
	Did he provide a house help when you were together if you did not already have one?	
	Did he encourage you to seek health care?	
	***If the entire above are negative then ask;** Did your husband show any other support? **State the support:**	
24.	During your last pregnancy and if applicable after the baby was born who assisted you?	
	A. Husband D. Children G. In-laws B. Mother E. House help H. Others C. Sister/brother F. Friends I. Nobody ***If nobody go to the CHILD INJURIES Module on next page**	
25.	Which kind of support did you receive?	

	A. Helped with cooking C. Helped with other household chores B. Helped with care of other children D. Other	

CHILD'S INJURIES MODULE

DO NOT READ BUT PROMPT. INDICATE 1 (ONE) FOR ALL RESPONSES GIVEN AND 0 (ZERO) FOR ALL RESPONSES NOT GIVEN. ALLOW MULTIPLE RESPONSE

1.	What do you do to prevent a child form being burnt?	
	Prevent the child from playing near fire	
	Teach children not to play with fire & fire making devices (matches, lighter)	
	Teach children that fire is dangerous	
	Children learn through experience	
	Children are encouraged to sleep away from fire	
	Children are discouraged from plays that involve fire (cooking or roasting on fire)	
	A small child is strapped at the back of the caregiver when cooking	
	Other	
	Nothing	
2.	What do you do when a child has sustained a minor burn?	
	Apply cold water	
	Apply oil	
	Apply egg albumen (white)	
	Apply kerosene	
	Cover with leaves (traditional medicine)	
	Apply Vaseline/shea butter	
	Other	
	Nothing	
3.	What do you do to prevent children from taking medicines and chemicals?	
	Store medicines and chemicals out of children's reach	
	Not allow children to administer medicines and chemicals	
	Close tightly containers of medicines and chemicals	
	Nothing	
	Other	
4.	What do you do prevent children from sustaining cuts?	
	Putting all sharp objects and equipment away from children	
	Advice children not to play with sharp objects	
	Advice children not to play where there are stones and other sharp objects	
	Nothing	
	Other	
5.	What do you do when a child has a cut that is bleeding?	
	Apply cold drinks	
	Apply sand	
	Traditional medicine	
	Tie with piece of cloth	
	Put salt	

	Other	
	Nothing	
6.	What do you do when a child has sustained a bone injury?	
	Treat the child within the household	
	Treat the child at home and send him/her to a health facility	
	Take the child to the health facility	
	Take the child to a traditional bone healer	
	Nothing	
	Other	

PSYCHOSOCIAL MODULE

DO NOT READ BUT PROMPT. INDICATE 1 (ONE) FOR ALL RESPONSES GIVEN AND 0 (ZERO) FOR ALL RESPONSES NOT GIVEN. ALLOW MULTIPLE RESPONSES

1.	How can parents and or caregivers help children learn to talk?	
	Talk with the child	
	Respond when the child is trying to ask or say something	
	Read with the child	
	Story telling	
	Don't know	
	Other	
2.	What kind of play activities are available to your children?	
	Physical activities such as walking, biking, playing with toys or ball	
	Games involving child's creativity; making toys, painting, drawing, singing build sand houses, 'cooking'	
	Reading	
	Don't know	
	Other	
3.	How do you provide your children with a stimulating environment in which to grow up?	
	Exposing the children to their environment (cultural, natural, social, spiritual)	

	Provide child with playing and learning materials	
	Encourage children to make their own toys	
	Play with children	
	Give them time to play	
	Story telling	
	Do nothing	
	Other	
4.	What kind of support do you give your children when they are ill?	
	Provide them with home-based care	
	Take child to traditional healer	
	Take child to health facility	
	Comfort the child	
	Pay extra attention (provide more food and or liquids)	
	Pay for child's medical care	
	Nothing	
	Other	

5.	What kind of assistance or support does the father give when his children are ill?	
	Provides home-based care	
	Takes child for treatment outside the home	
	Takes child to a health facility	
	Comforts child (holding, cuddling, singing)	
	Pays extra attention (provides greater variety of food and or liquids)	
	Pays for child's medical care	
	Father is not present	
	Does nothing	
	Other	

6.	Which other people care for the child when s/he is ill?	
	Neighbour	
	Friends	
	Child's grandparent	
	Child's sister	
	Child's brother	
	Other relatives	
	Nobody	
7.	Do you have access to anyone who can counsel you on your child's emotional and or mental needs? YES = 1 NO = 0	
8.	Who can provide you with such help?	
	Traditional healers	
	Community health workers	
	Teachers	
	Religious leaders	
	Health care professionals	
	Community elders	
	Relatives	
	Don't know	
	Other	
9.	How do respond when your children behave pleasingly?	
	Shower the child with praises	
	Hug or kiss the child	
	Give the child special food or drink	
	Provide gifts or special treat for the child	
	Do nothing	

	Other	

SANITATION MODULE

1.	What is the source of water for members of this household?	
	A. Piped into dwelling B. Piped into yard/compound C. Unprotected dug well or spring well D. Pond, river, dam or stream E. Public tap F. Tube well or borehole G. Protected dug well or protected spring H. Other ***If answer = A or B, got to Q 4**	
2.	How far is the water source from your home? Very near = 1 Not so far = 2 Very far = 0	
3.	Is the water source congested? YES =1 NO = 0	
4.	Does the water source yield water all the time? YES = 1 NO = 0	
5.	Do you store water outside your home? YES = 1 NO = 0	
6.	Is the water container in which you sore water covered? (Observe whether covered) YES = 1 NO = 0	
7.	Do you have a toilet facility within your compound? YES = 1 NO = 0	
8.	Which type of toilet facility do you use? (Observe)	
	A. Flush toilet system B. Ventilated Improved Pit latrine (VIP) covered C. Ventilated Improved Pit latrine (VIP) uncovered D. Traditional pit latrine (covered) E. Traditional pit latrine (uncovered) F. 'Free range'	
9.	How do you dispose off faeces of children who are not yet walking?	
	A. Child's faeces are rinsed away B. Child's faeces are thrown into the latrine C. Faeces are thrown into a rubbish pit D. Child's faeces are buried in the yard/compound E. Child's faeces are thrown outside the yard/compound F. Other	
10.	How do you dispose off faeces of children who are walking?	

	A. Children always use the latrine B. Faeces are rinsed away C. Faeces are thrown into the latrine D. Faeces are thrown into a rubbish pit E. Faeces are buried in the yard/compound F. Faeces are thrown outside the yard/compound G. Other	

SANITATION MODULE CONTD.

ALLOW MULTIPLE RESPONSES

11.	How do you dispose off refuse or other waste material?	
	A. Refuse is thrown into the street/gutter B. Refuse is thrown into a waste disposal bin C. Refuse is burnt D. Refuse is collected E. Refuse is buried F. Refuse is thrown into a pit G. Refuse is dumped at a refuse dumping site H. Other	
12.	On which occasions do you use soap when washing your hands?	
	A. After use of toilet B. Before eating C. After attending a child who has defecated D. After eating E. Before preparing food F. Before feeding a child G. Other H. Never	
13.	On which occasions do wash your hands without soap?	
	A. After use of toilet B. Before eating C. After attending a child who has defecated D. After eating E. Before preparing food F. Before feeding a child G. Other H. Never	
14.	Do you think there are any occasions when it is absolutely necessary to wash your hands with soap?	
	A. After use of toilet B. Before eating C. After attending a child who has defecated D. After eating E. Before preparing food F. Before feeding a child	

	G. Other H. No	

MALE INVOLVEMENT IN CHILD CARE AND REPRODUCTIVE HEALTH MODULE

1.	What does your husband do in caring for the children?	
	A. Encourages the wife to breastfeed B. Bathes the children C. Feeds the children D. Plays with the children E. Cooks for the children F. Takes them for treatment when they are ill G. Takes them to child welfare clinic H. Ensures that the children have the best food in the family I. Nothing J. Other ***If the husband is being interviewed, go to Q3**	
2.	Does your husband know about family planning? YES = 1 NO = 0 DON'T KNOW = 2	
3.	Have you heard of any family planning method? YES = 1 NO = 0 ***If NO go to next module on next page.**	
4.	Name any family planning method you have heard about. (**Allow multiple responses)** A. Male condoms F. Tubal ligation B. Pills G. Vasectomy	

	C. Injectables H. Don't know D. Loop/IUD I. Calendar method E. Female condoms J. Other ***If DON'T KNOW go to the next module on next page**	
5.	Where did you get the information from?	
	A. Radio F. Husband B. Newspapers G. Friends C. Health facility H. Relatives D. Health worker I. NGOs E. Community health worker J. Other	
6.	Which family planning method is your family currently using? (**Allow multiple ans)**	
	A. Male condoms F. Tubal ligation B. Pills G. Vasectomy C. Injectables H. Don't know D. Loop/IUD I. Calendar method E. Female condoms J. None ***If NONE/DK go to Q 8**	
7.	Where did you get the family planning services?	
	A. Private clinic E. Community health worker B. Shop F. Government/Church health facility C. Chemical shop G. NGO D. Other	
8.	Why are you not using any family planning method?	
	A. Services not available D. Family does not agree B. I don't want to E. Religious belief C. Husband will not agree F. Other	

ORS SOLUTION PREPARATION TEST

	Show caregiver/mother an ORS sachet and ask her/him to prepare the solution the way s/he usually prepares it for the children when they have diarrhoea	
1.	Does s/he wash her/his hands with soap and clean water? Yes = 1 NO = 0	
2.	Does s/he wash the container in which the ORS is to be prepared? YES = 1 NO = 0	
3.	Does s/he use clean water? YES = 1 NO = 0	
4.	Correct quantity of water/packet used (2 fanta/coke bottles = 1 beer bottle) YES = 1 NO = 0	
5.	Did s/he thoroughly stir leading to complete dissolution of the ORS powder? Yes = 1 NO = 0	
6.	Is the entire sachet used? YES = 1 NO = 0	
7	Does the caregiver know how to prepare ORS? (Total sachet use with correct amount of clean water and completely stirred). YES =1 N0 = 0 PARTIALLY = 2	

PLEASE TEST SALT FOR IODINE USING TEST KIT:

Present = YES = 1 Not present = NO = 0

[ ]

FOR EACH CHILD, ASK THE FOLLOWING:

Name						
Sex						
Father alive?						
Mother alive?						

DID ANY CHILD UNDER 5 YEARS PASS AWAY IN THIS HOUSEHOLD DURING THE PAST YEAR?

YES = 1 NO = 0

[ ]

IF YES FILL THE FOLLOWING TABLE

Sex	Age	Died in a hospital	Died at home, but had been to the hospital/HC for the disease that killed him/her	Died at home. Never went to a hospital/HC for the disease that killed him/her
Male	Less than 1 year			
	1 – 2 years			
	2 – 5 years			
Female	Less than 1 year			
	1 – 2 years			
	2 – 5 years			

THANK YOU VERY MUCH FOR YOUR TIME

Appendix 2: Key Family Practices for Child Health, Ghana

Pregnancy, delivery and newborn care

1. Pregnant women make at least 4 antenatal care vis
2. Pregnant women receive at least 2 doses of tetanus toxoid vacci
3. Pregnant women receive at least 2 doses of IPT during pregnancy
4. Women are delivered by a skilled birth attendant
5. Breastfeeding is initiated within 30 minutes of bi
6. Women and newborns are seen within 2 days of delivery by a train provider

Infant Feeding

7. Children under 6 months of age are exclusively breastf
8. Children aged 6-9 months receive appropriate breastfeeding and complementary feeding

Prevention of illness

9. Children receive a dose of vitamin A every 6 months
10. Children receive all vaccines before 12 months of age
11. Children sleep under an insecticide treated net
12. Households use improved sources of drinking water and store water safely
13. Households use adequate sanitary means of excreta disposal

Management of illness

14. Sick children are offered increased fluids and continued feedi
15. Children with fever receive appropriate antimalarial treatment
16. Children with diarrhea receive ORT (ORS and/or appropriate home fluid)
17. Children with pneumonia receive antibiotic from a trained provider

Source: Ghana Ministry of Health, 2009

Appendix 3: 16 key household practices

A) For physical growth and mental development

- Breastfeed infants exclusively for six months
- Starting at about six months of age, feed children freshly prepared energy- and nutrient-rich complementary foods, while continuing to breastfeed up to two years or longer
- Ensure that child receives adequate amounts of micronutrients (vitamin A and iron, in particular), either in diet or through supplementation
- Promote mental and social development by responding to child's needs for care through talking, playing, and providing a stimulating environment

B) For Disease Prevention

- Take child as scheduled to complete the full course of immunizations (BCG, DPT, OPV, and measles) before the first birthday
- Dispose of feces, including child feces, safely; wash hands after defecation, before preparing meals, and before feeding
- Protect child in malaria-endemic areas by ensuring sleep under insecticide-treated bednet
- Adopt and sustain appropriate behaviors regarding prevention and care for HIV/AIDS-affected people, including orphans

C) For Appropriate Home Care

- Continue to feed and offer more fluids, including breastmilk, to child when sick
- Give sick child appropriate home treatment for infections
- Take appropriate actions to prevent and manage child injuries and accidents
- Prevent child abuse and neglect and take appropriate action when in has occurred

- Ensure that men actively participate in providing childcare, and are involved in the reproductive health of the family

D) For Seeking Care

- Recognize when sick child needs treatment outside the home and seek care from appropriate providers
- Follow the health worker's advice about treatment, follow-up, and referral
- Ensure that every pregnant woman has adequate antenatal care, including at least four antenatal visits with an appropriate health care provider, tetanus toxoid vaccination and support from family and community in seeking care at the time of delivery and during the postpartum and lactation period

Source: UNICEF, 2000

Appendix 4: List of study communities
Nadawli (NA)

Sub-district/Community	Code	Data collectors	Proposed date
Issa (2)			
Duang	NA 901-10	Robert Bayuo (BR) Cynthia Kubio (CK)	20/09/08
Namula	931-40	PNA/LK	21/09/08
Kojokpere (1)			
Jolinyiri	911-20	Philip-Neri Aboyinga (PNA) Leonard Kpenindene (LK)	20/09/08
Fian (1)			
Korinyiri	921-30	RB/CK	21/09/08
Jang (2)			
Kpagdiga	941-50	RB/CK	22/09/08
Zambogu	951-60	PNA/LK	22/09/08
Kaleo (3)			
Kaluri	961-70	RB/CK	23/09/08
Nyuglu	971-80	PNA/LK	23/09/08
Gbankor	991-1000	PNA/LK	24/09/08
Sombo (1)			
Piree	981-90	RB/CK	24/09/08
Daffiama (4)			
Konzokala	1001-10	RB/CK	25/09/08
Owlo	1011-20	PNA/LK	25/09/08
Billi	1021-30	RB/CK	27/09/08
Taakpele	1031-40	PNA/LK	27/09/08
Bussie (1)			
Balienie	1041-50	RB/CK	28/09/08
Dapuori (1)			
Pirungyiri	1051-60	PNA/LK	28/09/08
Takpo (2)			
Nator	1061-70	RB/CK	01/10/08
Gyilli	1071-80	PNA/LK	01/10/08
Nanvilli (3)			
Namuo	1081-90	RB/CK	02/10/08
Konuori	1091-100	PNA/LK	02/10/08
Bayaaru	1141-50	RB/CK	06/10/08
Nadawli (5)			
Kankanzia	1101-10	RB/CK	03/10/08

Yiziiri	1111-120	PNA/LK	03/10/08
Biire/Kuo	1121-30	RB/CK	04/10/08
Dambaa	1131-1140	PA/LK	04/10/08
Kuntali	1151-60	PNA/LK	06/10/08
Charipkong (4)			
Mwindaali/Naayiri	1161-70	RB/CK	07/10/08
Vuuyiri	1171-80	PNA/LK	07/10/08
Konni	1181-90	RB/CK	08/10/08
Naagongu/Gabille	1191-200	PNA/LK	08/10/08

Wa Municipal (WM)

Bamahu (3)			
Seyiri	1-10	P Edward/H Munkailu	21/09/08
Dapuoha	11-20	PE/HM	22/09/08
Lorkporo	21-30	PE/HM	23/09/08
Chansa (5)			
Chansa	31-40	PE/HM	24/09/08
Nakori	41-50	PE/HM	25/09/08
Kagu	51-60	PE/HM	26/09/08
Dandaforo	61-70	PE/HM	27/09/08
Tampeini	71-80	PE/HM	01/10/08
Charungu (7)			
Churipieni	81-90	PE/HM	02/10/08
Kpaakole	91-100	PE/HM	03/10/08
Deenanbo	101-110	PE/HM	04/10/08
Tabiasi	111-120	PE/HM	05/10/08
Sagu	121-130	PE/HM	06/10/08
Kperisi	131-140	PE/HM	07/10/08
Kpongu	141-150	PE/HM	28/09/08
Busa (4)			
Bihee	151-160	Issah Eliyasu/Suleman Alhassan	21/09/08
Tangzu	161-170	IE/SA	22/09/08
Gorihi	171-180	IE/SA	23/09/08
Tampala	181-190	IE/SA	24/09/08
Charia (3)			
Sombo	191-200	IE/SA	25/09/08
Gbalaamuni	201-210	IE/SA	26/09/08
Gbegru/Ahiyor	211-220	IE/SA	27/09//08
Bamahu (4)			
Kponpaala	221-230	IE/SA	28/09/08
Piisi	231-240	IE/SA	01/10/08

Kunfabiala	241-250	IE/SA	02/10/08
Kulkpara	251-260	IE/SA	03/10/08
Sing (4)			
Bamahu	261-270	IE/SA	04/10/08
Sing	271-280	IE/SA	5/10/08
Jinkpang	281-290	IE/SA	06/10/08
Danku	291-300	IE/SA	07/10/08

Wa East (WE)

Kundungu (2)			
Sombisi	301-310	Sulley Abdulai/Amedeus Papunaah	21/09/08
Chawule	311-320	Sulley Abdulai/Amedeus Papunaah	22/09/08
Yaala (1)			
Kunyabin	321-330	Sulley Abdulai/Amedeus Papunaah	23/09/08
Funsi (3)			
Sawobele	331-340	Sulley Abdulai/Amedeus Papunaah	24/09/08
Tinniabe	341-350	Sulley Abdulai/Amedeus Papunaah	25/09/08
Buffiama	351-360	Sulley Abdulai/Amedeus Papunaah	26/09/08
Hulomuni (2)			
Yaaouyiri	361-370	Sulley Abdulai/Amedeus Papunaah	27/09/08
Gbantala	371-380	Sulley Abdulai/Amedeus Papunaah	28/09/08
Bulenga (7)			
Biskan	381-390	Sulley Abdulai/Amedeus Papunaah	01/10/08
Motigu	391-400	Sulley Abdulai/Amedeus Papunaah	02/10/08
Tiisa	401-410	Sulley Abdulai/Amedeus Papunaah	03/10/08
Dupari	411-420	Sulley Abdulai/Amedeus Papunaah	04/10/08
Kpaglahe	421-430	Sulley Abdulai/Amedeus Papunaah	05/10/08
Kpalnye	431-440	Sulley Abdulai/Amedeus	06/10/08

		Papunaah	
Goripie	441-450	Sulley Abdulai/Amedeus Papunaah	07/10/08
Loggu (9)			
Kunta	451-460	Adam Mahama/Gaspard Dakura	21/09/08
Yipaani	461-470	Adam Mahama/Gaspard Dakura	22/09/08
Buuroyiri	471-480	Adam Mahama/Gaspard Dakura	23/09/08
Sagu	481-490	Adam Mahama/Gaspard Dakura	24/09/08
Baalayiri	491-500	Adam Mahama/Gaspard Dakura	25/09/08
Kokoyiri	501-510	Adam Mahama/Gaspard Dakura	26/09/08
Boli	511-520	Adam Mahama/Gaspard Dakura	27/09/08
Kpakpalapno	521-530	Adam Mahama/Gaspard Dakura	28/09/08
Kpalanjo	531-540	Adam Mahama/Gaspard Dakura	01/10/08
Bayiri (6)			
Buala	541-550	Adam Mahama/Gaspard Dakura	02/10/08
Kaleobile	551-560	Adam Mahama/Gaspard Dakura	03/10/08
Goh-paani	561-570	Adam Mahama/Gaspard Dakura	04/10/08
Buolaa	571-580	Adam Mahama/Gaspard Dakura	05/10/08
Kadoli	581-590	Adam Mahama/Gaspard Dakura	06/10/08
Gudaayiri	591-600	Adam Mahama/Gaspard Dakura	07/10/08

Lawra (LA)

Babile (4)			
Zoopaal	1501-10	Vera/Emma	21/09/08
Kunyukua/Zongo	1511-20	Alfred/Abel	21/09/08
Birifo-Naayiri	1521-30	Vera/Emma	22/09/08
Zongo	1531-40	Alfred/Abel	22/09/08
Basebile (1)			
Kuselle	1541-50	Vera/Emma	26/09/08
Domwine(1)			
Koh/guori	1551-60	Vera/Emma	23/09/08
Eremon (2)			
Zipen	1561-70	Alfred/Abel	23/09/08
Sorguon	1571-80	Vera/Emma	24/09/08
Gegenkpe (2)			
Duotang	1581-90	Alfred/Abel	26/09/08
Bekyielu	1591-600	Vera/Emma	27/09/08
Ko (3)			
Pepellegangn	1601-10	Alfred/Abel	27/09/08
Pissie	1611-20	Vera/Emma	28/09/08

Tuopare	1621-30	Alfred/Abel	28/09/08
Lawra (6)			
Bagri/zongo/dagaati	1631-40	Vera/Emma	05/10/08
Yagtuuri	1641-50	Vera/Emma	06/10/08
Dikpe/Sampasa	1651-60	Vera/Emma	07/10/08
Gongpaar	1661-70	Alfred/Abel	07/10/08
Kuoli	1671-80	Alfred/Abel	06/10/08
Tuma	1681-90	Alfred/Abel	05/10/08
Nandom (5)			
Na-imwin/Zidong	1691-700	Alfred/Abel	03/10/08
Segru	1701-10	Vera/Emma	04/10/08
Brutu/nandomle	1711-20	Alfred/Abel	04/10/08
Taayaga	1721-30	Vera/Emma	02/10/08
Pataal	1731-40	Alfred/Abel	03/10/08
Puffien (3)			
Kokoligu	1741-50	Vera/Emma	01/10/08
Bapulla	1751-60	Alfred/Abel	01/10/08
Bu	1761-70	Vera/Emma	02/10/08
Zambo (3)			
Nuoyelle	1771-80	Vera/Emma	25/09/08
Kokori	1781-90	Alfred/Abel	24/09/08
Tampie	1791-800	Alfred/Abel	25/09/08

Wa West (WW)

Dorimon (9)			
Dabo	601-610	Justine/Speratus	26/09/08
Tamwa	611-20	John/Eric	26/09/08
Boro	621-30	Justine/Speratus	27/09/08
Guo	631-40	John/Eric	27/09/08
Kolingu	641-50	Justine/Speratus	28/09/08
Konduoni	651-60	John/Eric	28/09/08
Gongobile	661-70	Justine/Speratus	01/10/08
Eggu	671-80	John/Eric	01/10/08
Bilang	681-90	Justine/Speratus	02/10/08
Gurungu (5)			
Tawonchele II	691-700	John/Eric	18/09/08
Ang-yuokura	701-10	Justine/Speratus	18/09/08
Dapilayir I	711-20	John/Eric	19/09/08
Metii	721-30	Justine/Speratus	19/09/08
Chogsia II	731-40	John/Eric	20/09/08
Lassie (5)			
Kangba/Jebo	741-50	Justine/Speratus	20/09/08

Nankpaanabuloo	751-60	John/Eric	21/09/08
Gboriteng	761-70	Justine/Speratus	21/09/08
Buli	771-80	John/Eric	22/09/08
Gwalwob	781-90	Justine/Speratus	22/09/08
Poyenitanga (5)			
Jolerayiri	791-800	John/Eric	02/09/08
Sanuori	801-10	Justine/Speratus	03/09/08
Gadi	811-20	John/Eric	03/09/08
Bawa	821-30	Justine/Speratus	04/09/08
Nakor	831-40	John/Eric	04/09/08
Wechau (6)			
Tambilijie	841-50	Justine/Speratus	23/09/08
Jolinteyiri	851-60	John/Eric	23/09/08
Dornye II	861-70	Justine/Speratus	24/09/08
Dariguoyiri	871-80	John/Eric	24/09/08
Tanvaare	881-90	Justine/Speratus	25/09/08
Tegme	891-900	John/Eric	25/09/08

Sissala West (SW)

Jeffisi (6)			
Duwie	2251-60	Sumani Sulemani/Mori Mohammed	21/09/08
Kurtulo	2261-70	Sumani Sulemani/Mori Mohammed	22/09/08
Timmie	2271-80	Sumani Sulemani/Mori Mohammed	23/09/08
Gbenelle	2281-90	Sumani Sulemani/Mori Mohammed	24/09/08
Bullu	2291-2300	Sumani Sulemani/Mori Mohammed	25/09/08
Ngimati	2301-10	Sumani Sulemani/Mori Mohammed	26/09/08
Gwollu (11)			
Jitton	2391-2400	Sumani Sulemani/Mori Mohammed	06/10/08
Kusali	2361-70	Sumani Sulemani/Mori Mohammed	04/10/08
Sangbaka	2311-20	Sumani Sulemani/Mori Mohammed	27/09/08
Jawia	2371-80	Sumani Sulemani/Mori Mohammed	05/10/08
Pulima	2321-30	Sumani Sulemani/Mori Mohammed	28/09/08
Sorbelle	2331-40	Sumani Sulemani/Mori	01/10/08

		Mohammed	
Buoti	2341-50	Sumani Sulemani/Mori Mohammed	02/10/08
Kandia	2351-60	Sumani Sulemani/Mori Mohammed	03/10/08
Gbarima	2381-90	Sumani Sulemani/Mori Mohammed	05/10/08
Gbal	2101-10	Mensah Wajiwie/Yaw Suleman	21/09/08
Fatchu	2111-20	Mensah Wajiwie/Yaw Suleman	22/09/08
Fielmoa (7)			
Wiiro	2121-30	Mensah Wajiwie/Yaw Suleman	23/09/08
Moshiyiri	2131-40	Mensah Wajiwie/Yaw Suleman	24/09/08
Nimoro	2141-50	Mensah Wajiwie/Yaw Suleman	25/09/08
Kankanduole	2151-60	Mensah Wajiwie/Yaw Suleman	27/09/08
Mbo A	2161-70	Mensah Wajiwie/Yaw Suleman	28/09/08
Gaapani	2171-80	Mensah Wajiwie/Yaw Suleman	01/10/08
Liero	2181-90	Mensah Wajiwie/Yaw Suleman	02/10/08
Zini (6)			
Tiwii	2191-2200	Mensah Wajiwie/Yaw Suleman	03/10/08
Nyivil	2201-10	Mensah Wajiwie/Yaw Suleman	04/10/08
Du-West	2211-20	Mensah Wajiwie/Yaw Suleman	05/10/08
Lulb	2221-30	Mensah Wajiwie/Yaw Suleman	06/10/08
Dakuma	2231-40	Mensah Wajiwie/Yaw Suleman	07/10/08
Heil	2241-50	Mensah Wajiwie/Yaw Suleman	08/10/08

Jirapa-Lambussie (JL)

Pina (3)			
Gyriga	1201-10	Ayisha/Mornah	20/09/08
Kanguol	1211-20	Ayisha/Mornah	21/09/08
Bognuo	1221-30	Ayisha/Mornah	22/09/08
Ullo (1)			
Ul-nabri	1231-40	Ayisha/Mornah	23/09/08
Yagha (2)			
Tie	1241-50	Ayisha/Mornah	24/09/08
Kusglo/bouyella	2151-60	Ayisha/Mornah	25/09/08
Kane (2)			
Kane-dampuo	1261-70	Ayisha/Mornah	27/09/08
Die	1271-80	Ayisha/Mornah	28/09/08
Jirapa (9)			
Tizza naayibog	1281-90	Ayisha/Mornah	01/10/08
Sigri baapare	1291-1300	Ayisha/Mornah	02/10/08
Zingpen	1301-10	Ayisha/Mornah	03/10/08

Moyir	1311-20	Ayisha/Mornah	04/10/08
Nambeg	1341-50	Ayisha/Mornah	08/10/08
Yiepiel	1441-50	Peter Alando/Henry Asanpong	03/10/08
Yipaala	1481-90	Peter Alando/Henry Asanpong	08/10/08
Vieveri	1491-1500	Peter Alando/Henry Asanpong	09/10/08
Tampaala	1431-40	Peter Alando/Henry Asanpong	02/10/08
Samoa (2)			
Sina dndee - Samoa	1321-30	Ayisha/Mornah	05/10/08
Gbingbaala	1331-40	Ayisha/Mornah	07/10/08
Hamile (4)			
Hapa	1351-60	Peter Alando/Henry Asanpong	21/09/08
Tapoma	1361-70	Peter Alando/Henry Asanpong	22/09/08
Lambussie (2)			
Ketu	1371-80	Peter Alando/Henry Asanpong	23/09/08
Butisi	1381-90	Peter Alando/Henry Asanpong	24/09/08
Billaw (1)			
Heritengu	1391-1400	Peter Alando/Henry Asanpong	25/09/08
Han (1)			
Nindowala	1401-10	Peter Alando/Henry Asanpong	27/09/08
Sabuli (2)			
Mwaakuri	1411-20	Peter Alando/Henry Asanpong	28/09/08
Goziiri	1421-30	Peter Alando/Henry Asanpong	29/09/08
Yagha (1)			
Kpanguori	1451-60	Peter Alando/Henry Asanpong	04/10/08
Douri (1)			
Muriwie	1461-70	Peter Alando/Henry Asanpong	06/10/08
Tuggo (1)			
Dog	1471-80	Peter Alando/Henry Asanpong	07/10/08

Sissala East (SE)

Tumu (8)			
Dangi	1871-80	Andrews /Alandu Mutani	28/09/08
Dimajan	1921-30	Andrews /Alandu Mutani	05/10/08
Chinchan	1931-40	Andrews /Alandu Mutani	06/10/08
Kasanpuori	1941-50	Andrews /Alandu Mutani	07/10/08
Lilixi	2061-70	Amadu Jongi/Bawa Basugu	04/10/08
Nahadakui	2071-80	Amadu Jongi/Bawa Basugu	05/10/08
Kong	2081-90	Amadu Jongi/Bawa Basugu	06/10/08
Bakwalla	2091-2100	Amadu Jongi/Bawa Basugu	07/10/08
Nabulo (5)			
Bawisibelle	1801-10	Andrews /Alandu Mutani	21/09/08
Duu East	1811-20	Andrews /Alandu Mutani	22/09/08
Fachoboi	1971-80	Amadu Jongi/Bawa Basugu	23/09/08

Gwosi I	1951-60	Amadu Jongi/Bawa Basugu	22/09/08
Gwosi II	1961-70	Amadu Jongi/Bawa Basugu	21/09/08
Kunchorgu (6)			
Banu	2051-60	Amadu Jongi/Bawa Basugu	03/10/08
Kwapun	2041-50	Amadu Jongi/Bawa Basugu	02/10/08
Pina	1881-90	Andrews /Alandu Mutani	01/10/08
Tanla	1891-1900	Andrews /Alandu Mutani	02/10/08
Tanvielle	1901-10	Andrews /Alandu Mutani	03/10/08
Naveiribie	1911-20	Andrews /Alandu Mutani	04/10/08
Kulfuo (3)			
Pieng	1981-90	Amadu Jongi/Bawa Basugu	24/09/08
Challu	1991-2000	Amadu Jongi/Bawa Basugu	25/09/08
Kuroboi	1831-40	Andrews /Alandu Mutani	24/09/08
Wellembelle (4)			
Bechemboi	1821-30	Andrews /Alandu Mutani	23/09/08
Sentie	1841-50	Andrews /Alandu Mutani	25/09/08
Jijen	1851-60	Andrews /Alandu Mutani	26/09/08
Bugubelle	1861-70	Andrews /Alandu Mutani	27/09/08
Nabugubelle (4)			
Yigantu	2001-10	Amadu Jongi/Bawa Basugu	26/09/08
Dolibizon	2011-20	Amadu Jongi/Bawa Basugu	27/09/08
Nanchalla	2021-30	Amadu Jongi/Bawa Basugu	28/09/08
Bujan	2031-40	Amadu Jongi/Bawa Basugu	01/10/08

Appendix 5: Training Content of 5-day course for data collectors and supervisors:

Day 1

Introduction of core research team members and Ghana Health Service personnel and participants (field assistants)

Explain administrative arrangements for the training and field data collection.

Details of working hours, pay, survey schedule, transportation and everyday procedures.

Non-interventional study designs (current cross-sectional study design, steps and approaches); Data collection techniques and tools in cross-sectional designs.

Outline of survey procedure – explain importance of the data to be collected and the use it would be put to; sample size determination, cluster/household/individual selection methodology; community protocols and taboos ethics in research

16 key household practices, indicators important for child survival

Discussion of questionnaire question-by-question

Day 2

Recap previous day's work

Continue question-by-question discussion of questionnaire (explain and discuss each question, all unfamiliar terms should be explained)

Interview technique – community entry, gaining confidence of respondent, avoiding induction of answers

Questionnaire sample collection training for supervisors

Demonstration interview

Role play interviews where data collectors interview each other using English questionnaire (to be filmed)

Critique of role plays (play back recorded video tapes)

Day 3

Recap

Translate questionnaire into local languages

Retranslate questionnaire into English

Discussion of disagreements

Role play data collection using translated questionnaires (to be filmed)

Critique role plays (play back recorded video tapes)

Day 4

Recap

Discuss other tools – focus group discussion guide, exit interview questionnaire, dummy table, and check list

Discussion of how to handle empty buildings and refusals

Discussion of data collector influencing respondent's answers

Field pretest of data collection tools in communities with similar characteristics as study communities (to be filmed)

Critique pretest (play back recorded version and agree on solutions to any identified problems, weaknesses and or biases)

Go over field practice questionnaires; identified problems and agreed solutions

Day 5

Recap

Recap instructions for data collectors

Review instructions for supervisors – need to monitor interviews and check interview quality on the spot

Discuss how to deal with interview errors

Handling completed questionnaire and checks to run on quality of work

Random checks on readiness of supervisors and data collectors through simulated exercise

Appendix 6: Participant information leaflet

PARTICIPANT INFORMATION LEAFLET/INFORMED CONSENT

HOUSEHOLD and INDIVIDUAL QUESTIONNAIRE

For mothers/caregivers

PI: Easmon Otupiri

Study Title: District inequities in household child survival practices in the Upper West Region of Ghana

IRB No.: IRB3073

PI Version Number/Date: 20 February 2008

WHAT SHOULD YOU KNOW ABOUT THE STUDY

- You are being asked to join a research study.
- This consent form explains the research study and your part in the study.
- Please listen carefully and ask questions if you do not understand.
- You are a volunteer. You can choose not to take part and if you join, you may quit at any time. There will be no penalty if you decide to quit the study.
- During the study, we will tell you if we learn any new information that might affect whether you wish to stay in the study.

PURPOSE OF RESEARCH STUDY

You are invited take part in a research study. The purpose of this study is to learn more about the level and quality of household practices that affect the survival, growth and development of children under-five in the Upper West Region Information

from this research will be used to help improve the interventions that the Ghana Health supports with the view to improve the health of children.

WHY YOU ARE BEING ASKED TO PARTICIPATE

You are invited to participate in this study because you are a mother or primary caregiver of a child under-five or a household head. You also are a resident of the Upper West Region.

PROCEDURE

If you agree to be in this study, we will ask you to participate in an interview. We will ask about your children under-five, we'll ask about your health care seeking behaviours and that of your husband, and we'll also ask about sanitation and water. The questions will be about the following topics:

a. Illness episodes suffered by your children in the last weeks
b. Breastfeeding practices, infant and young child feeding practices and other child health issues such as vaccinations
c. Your last pregnancy and where you delivered
d. Child deaths
e. Your husband's role in reproductive and child health
f. Family planning

People may have a wide range of answers to these questions. There is no right or wrong answer. We want to hear your experiences and ideas. You can skip any questions you do not want to answer or stop the interview at any time. Each interview is about 90 minutes long. .

RISKS/DISCOMFORTS

We think that being part of this study has very low risk for you. You might feel uncomfortable discussing some of the topics. You do not have to answer any question you do not want to answer.

BENEFITS

There are no direct benefits to you from being in this study. You may enjoy thinking about these subjects and sharing your opinion of them.

If you take part in this study, you may help others in the future. The information you provide will be used to shape maternal and child health programmes for the people of Upper West Region in particular and Ghana as a whole.

PROTECTING DATA CONFIDENTIALITY

We will make every effort to protect your confidentiality. You will not be named in any reports that are written based on this research. Any information that might identify you will not be shared with other community residents or health providers. All data reported will be aggregated.

The information from your interview will be stored on a password-protected computer. We will type up the interview and take out your name or any information that might identify you. As soon as we complete all the interviews and enter the information into the computer, we will delete all records with your name and contact information. All paper files will be in locked cabinets in locked offices. Only the research team will have access to any of this information and they may not share it with anyone else.

VOLUNTARY PARTICIPATION

You do not have to agree to be in this study, and you may change your mind at any time.

WHO DO I CALL IF I HAVE ANY QUESTIONS OR PROBLEMS?

- Call Dr. Easmon Otupiri at 233-020-8111980 if you have questions or complaints about being in this study.

If you have any other questions, concerns or complaints about this study, please contact the Kwame Nkrumah University of Science and Technology Committee on Human Research, Publications and Ethics. Their contact information is:

Committee on Human Research Publication and Ethics

Kwame Nkrumah University of Science and Technology & Komfo Anokye Teaching Hospital

Kumasi, Ghana

Telephone: 051-63248

020-545-3785

Email: chrpe.knust.kath@gmail.com

PERMISSION TO PROCEED

Do you have any questions about what we have discussed so far?

Is it okay to proceed with the interview?

Statement of person obtaining informed consent:

I have fully explained this research to _____
and have given sufficient information, including that about risks and benefits, to enable the prospective participant make an informed decision to or not to participate.

DATE: _____ NAME: _____

Statement of person giving consent:

I have read the information on this study/research or have had it translated into a language I understand. I have also talked it over with the interviewer to my satisfaction.

I understand that my participation is voluntary (not compulsory).

I know enough about the purpose, methods, risks and benefits of the research study to decide that I want to take part in it.

I understand that I may freely stop being part of this study at any time without having to explain myself.

I have received a copy of this information leaflet and consent form to keep for myself.

Name_____
____

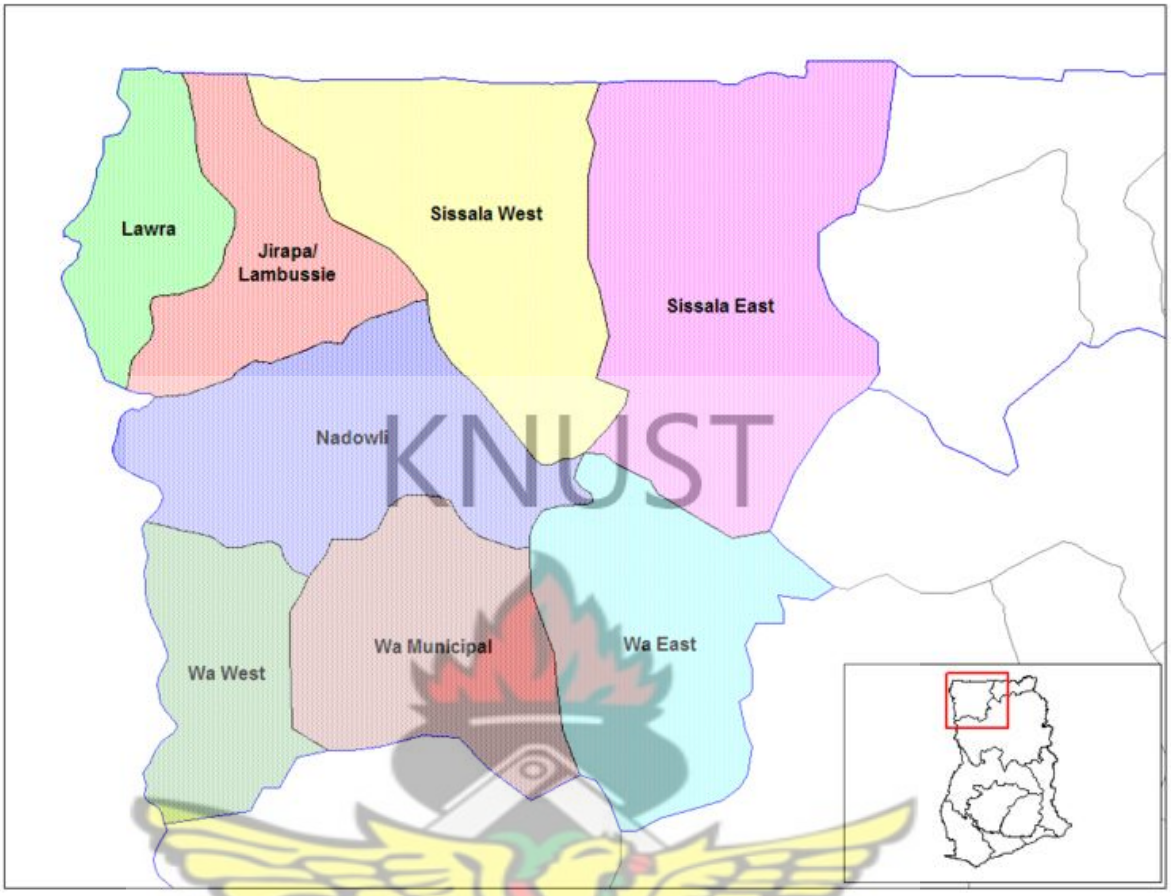
DATE: _____ SIGNATURE/THUMB PRINT: _____

FOR NON-LITERATE PARTICIPANTS

WITNESS' SIGNATURE
_____

WITNESS' NAME:
_____

Appendix 7: Map of Upper West Region



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