

# Gender Determined Roles and Under-Five Mortality among Agro-Pastoralist Communities in Handeni District, Tanzania

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## Abstract

*This paper explored gender determined roles and their impact to under-five mortality in the study area. A cross-sectional research design was used to collect data from 160 agro-pastoralist households using a simple random sampling technique. Data were collected in August, 2016 in Handeni District, Tanzania mainly through a questionnaire-based survey. Descriptive statistics showed households prevalence of under-five mortality 12 months prior to the survey for Kibaya, Msomera, Malezi and Kilimilang'ombe villages to be 24.6%, 24.6%, 31.6% and 19.2%, respectively. Binary logistic regression analysis showed that timely household decision, control of household income and equal involvement of household members in the subsistence farming had significant influence on reduction of household under-five mortality. The influence was at  $\beta = -0.071$ ,  $p = 0.000$ , odd ratio = 0.931,  $\beta = -1.828$ ,  $p = 0.032$ , odd ratio = 0.674 and  $\beta = -1.013$ ,  $p = 0.022$ , odd ration = 0.362 respectively. The study findings indicate that women involvement in household decision making and use of household income contribute to the reduction of under-five mortality. It is also the same when subsistence farming is considered as a role for all household members rather than considering it as a women's role alone. Government, non-governmental organisations and other stakeholders should create awareness campaigns in form of seminars and workshops on gender equality in agro-pastoralist communities. This paper recommends further studies to explore roles of culture on household power dynamics and their implication to under-five mortality.*

## Keywords

*Gender determined roles; agro-pastoralists; under-five mortality; culture*

## Introduction and Background

Gender is an image representing the societies' collective knowledge of customs, values, roles, myths, and ideas; it is within this knowledge that an individual develops a stereotype or a belief about gender (Olah et al., 2014). Gender stereotypes are related to cognitive processes because we have different expectations for men's and women's behavior which mostly vary with culture. Culture is the most important factors influencing gender inequality which burdens women with unequal division of gender roles that subsequently impact the health of under-five children (Tazeen et al., 2011; Batra et al., 2016). Inequality between men and women subject under-five children to the hands of less empowered

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women possibly missing power to make immediate decisions to avert health problems, which results into under-five mortality (Chantet al., 2017).

Under-five mortality is a global challenge, which has led to establishment of efforts aiming at reducing its trends (Adinew et al., 2017). Global efforts worldwide reduced under-five mortality from 91 deaths per 1,000 live births in 1990 to 43 deaths per 1,000 live births in 2015. This is a decrease of annual number of under-five deaths from 12.7 million to 5.9 million over the same period (UNICEF, 2015). While Sub-Saharan Africa (SSA) reduced under-five mortality from 180 deaths per 1,000 live births in 1990 to 83 deaths per 1,000 live births in 2015, Tanzania recorded a reduction of under-five mortality from 165.5 to 52 between 1990 and 2015, respectively (UNICEF, 2015; WHO, 2015), which is by far below the Millennium Development Goal (MDG) number 4 that targeted to reduce SSA under-five mortality to 60 deaths per 1,000 live births by 2015 (UNICEF, 2015; WHO, 2015). Among SSA countries, which remained with high under-five mortality in 1,000 live births by 2015 include Sierra Leone (187), Democratic Republic of Congo (180), Mali (165), Guinea-Bissau (156) and Angola (156) among others (United Nations, 2015).

In view of the above, the recorded reduction of under-five mortality in Tanzania is an achievement which makes Tanzania to be one out of ten SSA countries which have achieved the MDG 4 target of reducing by a half under-five mortality by 2015 (Save the Children/JordiMatas, 2015). Other countries include Eritrea, Ethiopia, Liberia, Madagascar, Malawi, Mozambique, Niger, Rwanda and Uganda (WHO, 2015). Although there is an achievement in reduction of under-five mortality in Tanzania, still more efforts are needed since the current reduction does not apply equally to all regions and districts (URT, 2015). Handeni District with 84.8 deaths per 1,000 live birth was observed to be among districts in Tanzania with higher under-five mortality compared to 52 deaths per 1,000 of the overall under-five mortality for the entire country (URT, 2015). Populations living traditional life in rural areas like agro-pastoralists are likely to encounter challenges, which can hinder reduction of under-five mortality (URT, 2018). The challenges include access to appropriate health facilities and correct treatment services. Delayed use of household income and other resources caused by differential gender roles is likely to be one of the challenges contributing to the prevalence of under-five mortalities among traditional communities like agro-pastoralists.

Rural population, like agro-pastoralists, firmly adhere to culturally determined gender practices and roles (Zuma, 2017). They hardly change even when there are adverse consequences noted throughout generations in relation to such practices. For example, there has been a belief across many African traditional communities, which is manifested by boys' being more enrolled in schools than girls (Johannes, 2010; UNICEF, 2010). Several efforts have been made to promote awareness on why girls should be given equal chances to attend education like boys. Some of the efforts are introduction of programmes like education for all, educating a woman is the same as educating a nation, and encouraging women to apply for training in different scholarships whereby statements like women are highly encouraged to apply are common (UNESCO, 2015; Koskey, 2017).

In the case of caring for under-five children, among other roles, women face challenges; sometimes their children become ill and a need arises to obtain treatment. Sometimes going for a treatment receives little attention due to high workload among women in agro pastoralists' communities who are left at home with their husband to take care of children among other duties (Ringo et al., 2018). This is one example among many cases, which may explain the implication of uneven distribution of household roles (Pessin et al., 2017). Subsistence farming, among other roles in traditional African societies, involves mainly women who culturally determine household food condition (FAO, 2011). Subsistence

farming requires more of their time, which competes with time required to care for under-five children (Chauvin et al., 2012). In this situation, inequality in division of gender roles stands as a barrier towards efficient performance of household roles by women as well as a stumbling block to get access to appropriate health facilities. A number of studies for example have reported inequality in the division of gender roles highlighting the need for a balance to ensure women have reasonable workload so that they can concentrate and put much attention on fewer activities including taking care of children (Coltrane, 2000; Perrone et al., 2009; UNICEF, 2014).

This paper considers inequality in the division of gender roles to have impact on the health of under-five children that subsequently leads to under-five mortality. Gender inequality which in most African societies is practised in favour of men and on the expense of women marginalization, results in poor care of under five children by women who are denied the right to make quick decision in order to save under-five children (Chan et al., 2017). It is from this context; this paper explores gender-determined roles and their associated impact on the health of under-five children. Along the same line, this paper answers the following key questions: what is the prevalence of under-five mortality among agro-pastoralists households? What are genders determined roles that mostly influence under-five mortality among agro-pastoralist households? Answering these questions provides information on appropriate measures to be taken in order to reduce the prevalence of under-five mortality in agro-pastoralist households. The rest of the paper is structured with four sections; first the literature review which gives an overview of the division of gender roles and the research gap. Secondly, the research methodology that highlights the research designs, sampling procedure and the data analysis procedure. The third section presents the results of the findings resulting from collected data and the fourth section is on discussion, which discusses the findings and give the implication of results, draw conclusions and the final recommendations on the areas for further studies and the possible ways to address the identified challenges.

## **Literature Review**

### **Division of gender roles**

Drawing from Ester Boserup argument, the differences in gender roles have their origins in different forms of agriculture traditionally practised in the pre-industrial period (Alesina et al., 2011). Basing on shifting and plough cultivation, Boserup indicated important differences arguing that shifting cultivation was observed as labour intensive employing hand held tools such as the hand hoe and digging sticks. This was different from plough cultivation reported to be much more capital intensive throughout the soil preparation using plough. Working with the plough was observed to be tiresome, as it requires physical strength to be able to control it. This built up specialty of roles alongside gender lines, leading men to work outside home in the fields and women performing roles within the home (Giuliano, 2014). Generally, roles classification produced norms about suitable responsibilities of women in societies, which tend to stand even when production extends and involves other areas out of agriculture, upsetting the participation of women on activities performed outside home. These are such as employments, engaging in small businesses, marketing of household resources as well as cultural involvement of women in subsistence farming (Giuliano, 2014).

Within agro-pastoralist households, women in the absence of their husbands, especially during transhumance, take care of children who sometimes face challenge to access

appropriate health care facilities. They are also responsible for taking care of calves and milking cows left behind by their husbands. Flintan (2011) observed that divisions of household roles among agro-pastoralists affect men and women differently in the sense that women concentrate on activities around home. When new opportunities such as small business raise women's income, responsibilities and workload also increase. Increasing women responsibilities relatively to an increase in income is based on the assumption that involvement in small business makes women able to support more responsibilities besides their common roles like caring for under-five children among others (Kapinga et al., 2017; Tambi et al., 2017).

Studies on the effect of gender roles on the health of under-five children have created interest of most scholars (Oku et al., 2017). Health of the under-five children varies from place to place which may be due to cultural differences (Kandala et al., 2011). Culture can be one of the most important factors influencing gender inequality, which burdens women with unequal division of gender roles that subsequently impact the health of under-five children. Generally, gender roles are a result of relations between individuals and their surroundings, and they give individual clues about what kind of behaviour is believed to be correct for what sex category. This is learned and passed through generations (Pessin, 2017). This paper considers division of gender roles to have influence on the health of under-five children, which may lead to the prevalence of under-five mortality. This argument is based on the fact that if women are overburdened with other core household duties than men are likely not to take much attention to each activity they do including caring of under-five children, which subsequently may lead to under-five mortality. In agro-pastoralists communities it is a common phenomenon for unequal division of roles between men and women of which women carry more workload than men, yet it is not clear to what extent unequal gender roles among agro pastoralists has accelerated under-five mortality (Ringo et al., 2018). This raises the question on:

**Question 1: What is the prevalence of under-five mortality among agro-pastoralists household?**

Understanding the prevalence of under-five mortality will help to identify the magnitude of the problem and give justification for intervention in order to address the challenge of inequalities in gender roles.

Gender refers to the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men (Pfeifferet and Mwaipopo, 2013). It varies from society to society and can be changed. While most people are born either male or female, they are taught appropriate norms and behaviors – including how they should interact with others of the same or opposite sex within households, communities and work places. When individuals or groups do not “fit” established gender norms they often face stigma, discriminatory practices or social exclusion – all of which adversely affect health. It is important to be sensitive to different identities that do not necessarily fit into binary male or female sex categories.

In view of the above, gender norms, roles and relations influence people's susceptibility to different health conditions and diseases and affect their enjoyment of good mental, physical health and wellbeing. They also have a bearing on people's access to and uptake of health services and on the health outcomes they experience throughout the life-course. According to Marinova (2003) culture can determine which sex category is superior between male and female. However, gender is beyond these groups as it takes on board other segments of population like children and elder groups. Gender roles vary spatially depending on cultural differences (UNFPA, 2017). It is clear that the sex category considered to be superior

can make decision in different areas including decision on kind of treatment (at formal or informal health facilities), access to education, employment, household resources and assets ownership. A wider gap between male and female has implications to various household aspects including caring for family, which has implication for the health of under-five children (Kandala et al., 2011; Ringo et al., 2018).

While it is evident that gender roles are driven by culture and a wider gap on gender roles account for the under-five mortality (Perrone et al., 2009), it is also logical to argue that not all gender roles have influence on under-five mortality. Along the same line, in view of the fact that culture differs from one society to another it is compelling to believe that agro pastoralist have unique culture which is not necessarily similar to other societies. This may also suggest that not all agro-pastoralist gender roles have impact on the under-five mortality. On the bases of these arguments it is raising the following question:

**Question 2: What are the genders determined roles among agro-pastoralist household contributing to the prevalence of under-five mortality?**

## Methodology

The survey was conducted in Tanga Region located in the North Eastern part of Tanzania. Handeni District was considered for the study as it is among districts in Tanzania, which have a large number of agro-pastoralists (Mwamfupe, 2015). Two wards, Misima and Chanika with many agro-pastoralists, were purposively chosen for the study. In addition, two villages were selected from each of two wards, making a total of four study villages. In general, agro-pastoralist male household heads were doing more outside home activities like grazing and lumbering, which made some of them take a number of days without going back home. Sometimes women were out where they were engaged in subsistence farming throughout the day and went back home during the evening. Some of women were doing small businesses around home while some of them remained at home.

A cross-sectional research design was used for the study. This design allowed collection of data at a single point in time, but also within a short time. Using a structured questionnaire, data collection exercise took place on August 2016. Random sampling was employed to select households for the study from the four villages that were selected. The villages were Kibaya, Msomera, Malezi and Kilimilang'ombe which together had a sum of 3,137 households which is 1,024, 1,000, 713 and 400 households for each of the villages, respectively. The number of households that were engaged in the sample in the four study villages was decided using relative allocation and simple random sampling techniques, resulting into a sample size of 160 agro-pastoralist households. The total number of households for every village was divided by 3,137, which was the sum of households for all villages, and multiplied by 160 to obtain the village representative samples. Afterwards, the obtained number for each village was divided by 160 and the answer multiplied by 100% to get the sampling percentage for each village (Table 1).

Simple random sampling technique was used to select representative household from each village where all households in each village has equal chance to be included in the sample. Nature and characteristics of agro-pastoralists found across the study villages were homogeneous, which assisted in deciding the sample size for the study. Essentially, a homogeneous population can be represented by a small sample, unlike a population with heterogeneous characteristics, which needs large samples. In addition, studies by Bailey (1994) & Grey (2014) suggested that at least a sample of 30 cases is sufficient for research

works whose variables are explored statistically. This study involved a sample of 160 agro-pastoralist households which were considered to be sufficient because the agro-pastoralists in Handeni districts have many common characteristics, including livestock keeping, women and men roles classification, farming practices etc.

**Table 1:** Sampling procedure

Village name	Total village number of households (A)	Sampling percentage (%) (B)	Representative households from each village (B/100x160)
Kibaya	1,024	32.6	53
Msomera	1,000	31.9	51
Malezi	713	22.7	36
Kilimilang'ombe	400	12.8	20
<b>Total household</b>	<b>3,137</b>	<b>100%</b>	<b>160</b>

The primary data were collected using a structured questionnaire. The questionnaire was pretested at Bangu Village in Handeni District. The pretesting of the questionnaire was done in order to test clarity of questions before embarking on data collection. After the pre-testing some of questions were adjusted for clarity. The Statistical Package for Social Sciences (SPSS- Version 20) was employed in the analysis of quantitative data. Descriptive statistics were computed to analyze data whereby numbers and percents were generated to address the first research question, which was about prevalence of under-five mortality among agro-pastoralists households. Number and percent of the study residents attending formal and/or informal health facilities were also computed using descriptive statistics.

Ethical approval was obtained from the postgraduate studies committee of the Sokoine University of Agriculture. However, concert of respondents was thought before interviews were carried out. A binary logistic regression model was used for the second research question which intended to explored gender determined roles contributing to the prevalence of under- five mortality among agro-pastoralist households in the study area. A dummy for the dependent variable (household health condition of under-five children) was coded as prevalence of under-five mortality = 1, otherwise = 0. The model used is shown in the equation below:

$$\text{Log} [P_i / (1-P_i)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_7 X_7 + \varepsilon,$$

where:

- $\text{Log} [P_i / (1-P_i)]$  = Natural logarithm of the odds of prevalence of under-five mortality = 1, while otherwise = 0
- $P_i$  = The probability that a household has experienced under-five mortality
- $1-P_i$  = Uncertainty of a household experiencing incidences of under-five mortality
- $\beta_0$  = Constant
- $\varepsilon$  = Error term
- $\beta_1$  to  $\beta_7$  = Logistic regression coefficients of the predictor variables

Independent variables in the model were measured as follows:

- $X_1$  = Household decision making (1 = Timely, 0 = Otherwise)
- $X_2$  = Household members involvement in subsistence farming (1 = equally involved, 0 = Otherwise)

$X_3$	= Education attainment between household members (1 = Formal education, 0 = Otherwise)
$X_4$	= Household member allowed to take loan (1 = Male household head, 0 = Otherwise)
$X_5$	= Control of household income (1 = Participatory, 0 = Otherwise)
$X_6$	= Caring for under-five children (1 = Female, 0 = Otherwise)
$X_7$	= Determination of child spacing (1 = Both male and female, 0 = Otherwise)

## Results

### Household incidences of under-five mortality

Results in Table 2 shows that incidences of children under-five mortality in Kibaya, Msomera, Malezi and Kilimilang'ombe were 24.6%, 24.6%, 31.6% and 19.3% respectively.

**Table 2:** Incidence of under-five mortality among agro-pastoralist households (n = 160)

Villages	Households incidences of under-five mortality in 12 months prior the survey			
	No		Yes	
	Number	Percent	Number	Percent
Kibaya	38	36.9	14	24.6
Msomera	37	35.9	14	24.6
Malezi	18	17.5	18	31.6
Kilimilang'ombe	10	9.7	11	19.2
<b>Total</b>	<b>103 (64.4%)</b>	<b>100%</b>	<b>57 (35.6%)</b>	<b>100%</b>

### Use of health facilities in the study area

Two different health systems, formal and informal were found applicable in the study area as shown in Table 3. The same people who were found attending to traditional healers, sometimes attended to a pharmacy, a village dispensary, etc. That is why the total number (316) of counts for formal and 299 for informal health facilities users exceeded 160, which was the sample size for the study, indicating that a single person was recorded several times, depending on the health facilities attended at a particular time.

**Table 3:** Attendance to formal and informal health facilities (n = 160)

Ward	Village	Formal health facilities	Informal health facilities
Misima	Kibaya	79 (25.0%)	97 (32.4%)
	Msomera	119 (37.7%)	93 (31.1%)
	Malezi	86 (27.2%)	69 (23.1%)
	Kilimilang'ombe	32 (10.1%)	40 (13.4%)
<b>Total</b>		<b>316 (100%)</b>	<b>299 (100%)</b>

### Influence of gender roles to the household incidence of under-five mortality

Several factors contribute to health of children under-five years among agro-pastoralist households. Various factors can collectively contribute to worsen agro-pastoralist households' economic status making it unfavourable for children under-five years' health and sometimes leading to prevalence of under-five mortality. This paper, among other things, examined division of gender roles among female and male-headed households in

order to see which mostly influenced health of under-five children among agro-pastoralist households at the same time contributing to under-five mortality.

Binary logistic regression model was used to identify the most influential variables on under-five- mortality. The results in Table 4 show that household decision making, control over household income and household members involvement in subsistence farming had significant influence on household health condition of under-five years children among agro-pastoralist households in the study area. The findings show that household decision making had a negative and statistically significant influence on health of underfive children recording an odds ratio of 0.931,  $\beta = -0.071$ ,  $p < 0.01$ . Indication is that for every timely decision at the household particularly for treatment of under-five-children were 0.931 times likely to reduce under-five mortality in the study area. The results in Table 4 further show that control of household income had a negative and significant influence on the health of under-five years children at the odds ratio of 0.674,  $\beta = -1.828$ ,  $p < 0.05$ . The findings indicate that, the more the household maintain participatory control of household income among agro-pastoralist, they were 0.674 times likely to reduce household incidence of under-five mortality in the study area. Subsistence farming in sub-Saharan African households is normally done by women. The results in Table 4 show that equal involvement in subsistence farming had a negative and statistically significant influence on the household health of under-five children at the odds ratio of 0.362,  $\beta = -1.013$ ,  $p < 0.05$ .Furthermore, this findings indicate that, involvement of household members in subsistence farming among agro-pastoralist were 0.362 times likely to reduce household incidence of under-five mortality in the study area, this is different when subsistence farming as a role is left to women alone.

**Table 4:** Gender roles' influence on under-five mortality among agro-pastoralists households

Variables entered in the model	B	S.E	Wald	df	p-value	Odd ratios
Household decision making	-0.071	0.020	13.125	1	0.000	0.931
Sex of household member allowed to take loan	0.617	0.738	0.697	1	0.404	1.853
Education attainment between household members	3.753	3.148	1.421	1	0.233	0.023
Control of household income	-1.828	1.840	0.895	1	0.032	0.674
Determination of child spacing	0.051	0.106	0.228	1	0.633	0.950
Caring under five children	0.253	0.592	4.476	1	0.380	1.286
Household members involvement in subsistence farming	-1.013	0.443	5.211	1	0.022	0.362
Constant	0.948	0.673	1.985	1	0.159	2. 581

-2 Log likelihood =101.078, Cox & Snell R2=0.230, Nagelkerke R2 = 0.320

## Discussion

The prevalence of under-five mortality in the study villages as shown in Table 2 varied from village to village. Observed variation results from factors such as attendance to appropriate treatment at the right time or when it is too late, time spent to understand as whether there was a health problem and action taken as a response to the problem. Inequality or equal division of gender roles in the study villages is also one of the reasons behind the observed variation of under-five mortality within the study villages. This is because it affects access to appropriate health facilities, which have impact on the health of under-five children. When informal health facilities are thought and attended for the treatment of under-five children subsequently contributed to the incidence of under-five mortality.

Attendance of residents to health facilities (Table 3) was mixed in such a way that a person attended to both health systems (formal and informal health facilities) interchangeably from time to time. Formal health facilities government and private hospitals were located at the district headquarters away from the study villages. Msomera was the only village found with a dispensary and a clinic hence; it is the only village, which had a slightly high percent (37.65%) of residents attending to formal health facilities. Informal health facilities dominate in the study village and easily accessed by village residents for treatment and delivery services. Traditional births attendants were most of the time eager to help their fellow women during delivery, though it is a risky activity as sometimes there were cases beyond their ability to handle. Poverty makes expecting mothers who would wish to go to formal health facilities to postpone and opt for informal ones (Pfeiffer & Mwaipopo, 2013). The observed number of under-five mortality was likely to be caused by use of informal health facilities including child delivery at traditional birth attendants. Informal health services are cheap in the sense that they do not need high finances like those which one would incur when going to formal health facilities (Owotunde et al., 2017).

Culturally, expecting mothers in African communities are close to their aunts, grandmothers and mothers-in-law who have no power over household resources due to cultural determined gender roles which give male heads the right to make decision over the use of household resources (Kamiya, 2010). In this situation the first option is to send expecting mothers to traditional birth attendants. For the case of treatment, agro-pastoralists women taking care of under-five children consider informal health facilities as an immediate solution. Inequality in gender roles divisions denies women the authority and power to decide and manage requirements for the treatment at formal health facilities. Informal health facilities do not have capacity to diagnose causes of diseases and recommend appropriate mitigation measures (Baltzellet al., 2013; Riddle et al., 2016). This paper considers this to have direct or indirect link to the inequality in gender roles division, which at the end leads to under-five mortality.

The study observed that timely household decision making was more likely to reduce household incidence of under-five mortality at the odds ratio of 0.931 (Table 4). The implication of this is that timely decision on correct intervention towards addressing health problems specifically related to underfive children is important. A study by Dillip et al. (2017) conducted in Tanzania, which is in line with the current study, observed that more timely access to appropriate health care is one of the factors contributing to reduction of child and maternal mortality. The current study encourages equally in decision making between male and female to enable timely attainment of treatment when there is a health problem, specifically that of under-fivechildren within agro-pastoralist households. When only one household member, let's say a male head, is entitled to power to decide on important household matters like use of household resources to meet the need of sending children for correct treatment, a particular household may decide to attend the services when it is too late. Timely decision is facilitated by a number of factors like power to decide by whoever is present during the need, being male or female. The same power to decide extends to the authority to use household resources and income to meet costs needed in order to save life of under-five children by making a timely decision about treatment.

In addition, the study observed that equal involvement in subsistence farming between women and men contributed to the reduction of household under-five mortality at the odds of 0.362. Equal involvement among household members minimizes effects that could face under-five children who are most of time under the care of women who are less empowered to make decision. Women having more time with their underfive children will be able to promptly respond against diseases and other health problems. Studies by Kandala et al.

(2011) and Tambi et al. (2017), which were conducted in DRC and Cameroon, observed that women involvement in subsistence farming limits care giving to under-five children. Unequal involvement in subsistence farming can expose under-five children to health problems which when persist longer may end in mortality.

The strength of this paper is that, it is a current and topical health, population and social study work which can guide the related study in other settings in Tanzania and even beyond. The weakness parts of this study are mainly based on the data collection period where language and mobility nature of agro-pastoralists challenged the data collection process. These weaknesses were addressed by interpretation, which was done by a person identified by Village Executive Officers. Revisiting agro-pastoralist households enabled to overcome problem originating from mobility nature of agro-pastoralists. To improve future studies, this study recommends use of qualitative techniques such as depth interview and focus group discussion to explore influence of gender-based household roles to the health of under-five children.

## Conclusions and Recommendations

It is concluded that prevalence of under-five mortality in the study area needs urgent intervention in form of training through seminars and workshops in order to save life of under-five children. Household gender roles division have an influence on the household condition of under-five children, specifically household prevalence of under-five mortality. Opting for informal health facilities ultimately contributes to the prevalence of under-five mortality in the study area. Government, non-governmental organisations and donors should provide formal health facilities within the study area. Road improvement and medicine availability need consideration in order to reduce prevalence of under-five mortality. Factors such as household decisionmaking, control of household income and household members' involvement in subsistence farming have an influence to the household health of under-five children. For example, timely decision on the use of household resources or income to the treatment of under-five children can help in improving health of under-five children. Equal involvement between women and men in subsistence farming reduces workload to women and give more time to women to care for under-five children and contribute to the reduction of household under-five mortality.

This paper recommends that rational household roles division and decision should be considered on the use of household income and other resources. This is in order to improve the wellbeing of households, including obtaining correct treatment for under-five children, which will contribute to the reduction of under-five mortality. However, seminars and workshops should aim at changing attitudes in agro-pastoralists communities regarding household decision-making, control of household income and involvement in subsistence farming. Advantages of allowing women to make decision and use household income for the sake of under-five children's health need to be made clear in the study area. The training also needs to indicate adverse health consequences affecting mostly under-five children in relation to accumulation of household's roles-including subsistence farming to women.

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