# Factors influencing implementation of integrated management of childhood illness in Lindi Region, Southern Tanzania

BONIPHACE IDINDILI[1*], UL HAQ ZAEEM[2], STEVEN AYELLA[2]; SUMAIYA G. THAWAR[1]; MAJIGE SELEMANI[1], STRINIC DRAGANA[2] and JOHN KALLAGE[2]

[1]*Independent Consultant P.O. Box 5091, Dar es Salaam, Tanzania*
[2]*Save the Children International, P.O. Box 10414, Dar es Salaam, Tanzania*

**Abstract**

**Background:** Save the Children Tanzania has been supporting several projects in Lindi Region including implementation of health facility based Integrated Management of Childhood Illness (IMCI) services in Kilwa, Ruangwa and Lindi rural districts. The objective of this study was to assess the IMCI services in a sample of health facilities and explore factors affecting the service provision and sustainability in Lindi, Tanzania.

**Methods:** A cross-sectional study was conducted involving 27 health facilities. Quantitative and qualitative approaches were used to collect the required data. Focus group discussions and in-depth interviews were also used to evaluate the IMCI services in these facilities.

**Results:** All health facilities visited were found to have adequate supply of IMCI equipment. However, there was inadequate availability and distribution of clinical officers in the districts. None of the 41 clinical officers observed, assessed sick children for all items in the IMCI checklist. Furthermore, health centres and dispensaries were found to have a serious shortage of essential medicines. Oral antibiotics for bacterial infections were available across health facilities. Amoxicillin was found in 4(44%) health centres and 7 (46.7%) dispensaries; Ampicillin was only available at 4(44.4%) health centres and 1 (6.7%) dispensary. Considerable challenges in access to health services were identified and they included long distances to health facilities, inadequate and unaffordable transport systems and continuous limited quality of care due to shortages of trained staff and drug stock outs. In addition, caregivers were found to have limited awareness of danger signs and symptoms of childhood illnesses.

**Conclusions:** The implementation of IMCI services in the three districts of Lindi region experiences multiple challenges despite the availability of adequate infrastructure for program implementation. This calls for strengthened supportive supervision, constant provision of medical supplies and training of IMCI health workers to improve services delivery to sick children. In addition community level promotion of prompt modern health care seeking behaviour is essential to enhance childhood illness care and treatment.

**Keywords:** children, illness, health, system, readiness, Tanzania

## Introduction

In sub-Saharan Africa, under-five child deaths is a major health problem (WHO, 2013, 2015).The known leading causes of death in under-five children are pneumonia, preterm birth complications, diarrhoea, malnutrition, birth asphyxia and malaria (Liu *et al.*, 2012)   In Tanzania, the most common causes of under-five deaths are preventable conditions that include pneumonia (13%), malaria (11%) and diarrhoea (8%) (Liu *et al.*, 2012). These deaths necessitated the government of Tanzania with support from development partners to implement high impact child survival interventions. Such interventions included Integrated Management of Childhood Illness. Through the programme, Tanzania has recorded significant decline in total under-five mortality from 141 deaths per 1,000 live births in 1990s (UNICEF/WHO/World Bank/UN, 2011), to 67 deaths per 1000 live births in 2015-2016 period (Mboera et al., 2015; TDHS-MIS, 2016).

IMCI implementation coupled with other child survival interventions has greatly reduced mortality rates in Tanzania. However it was still not sufficient to achieve the Millennium Development Goals target by 2015 (Leach, 2007). According to the demographic health survey data Lindi region remained with the highest under-five mortality rates in the country (TDHS, 2011). Malnutrition prevalence was very high with 54% stunting among under-five children that is

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[*] Correspondence E-mail: idindili@yahoo.co.uk

worse than the national average of 42%. Anaemia prevalence in the region stands at 6.1% which is higher than the national average of 5.1%. The indicators for infant and under-five mortality rates have remained high (220-250 deaths per 1000 live births) in the region for many years due to extreme poverty and shortage of food (Borgi & Prosper, 2009).

Due to the stated high under-five mortality rates in Lindi region, Save the Children initiated a 4-year facility-based IMCI programme to provide quality case management for children under-five with an ultimate goal of reducing under-five mortality rates in the region. The programme has been implementing activities in three districts, Lindi Rural, Ruangwa and Kilwa. The programme's major emphasis has been on providing training, supportive supervision and supporting refresher trainings for health care workers. In addition, Save the Children uses community-owned resource persons (CORPs) to provide health education to care givers and referral of sick children to health facilities for appropriate care and treatment of childhood illnesses.

Since the IMCI health facility-based program reached its 4th year end of implementation year, Save the Children commissioned this evaluation. The aim of this study was to carry out an evaluation to assess the status of IMCI services in the three districts at the end of its fourth year of implementation. This study also examined to what extent district health systems, health providers' and supervisors' practices are adequate for provision of quality IMCI services in the region and the factors influencing community based treatment of childhood illness.

**Materials and Methods**

*Study area*
This study was conducted in three districts of Lindi region, namely Lindi Rural, Ruangwa and Kilwa. Majority of the inhabitants of the study districts are subsistence farmers and petty traders. The districts are largely rural with most of the population scattered in settlements in villages with differing coverage of basic essential services such safe water supply, education and health care. The district headquarters are semi-urban areas with mixed sources of income for the residents such as government employed, small business and farming.

*Study design and data collection*
This was a cross-sectional survey conducted during April-May 2013. The study was carried out in a sample of 27 randomly selected health facilities including hospitals, health centres and dispensaries. The health facilities included in the study were 12, 8 and 7 in Lindi rural, Ruangwa and Kilwa, respectively. This study used quantitative and qualitative approaches in which structured questionnaires were used to collect quantitative data and focus group discussion (FGD) and In-depth interviews approaches were used to collect qualitative data.

The questionnaires and checklist was developed based on WHO IMCI assessment tools and was adapted to Lindi region conditions (WHO, 2003). A semi-structured questionnaire was developed for the purpose of obtaining information on factors influencing community based treatment of childhood illness. The questionnaire had two sections; the first section was directed to Council Health Management Team members and aimed to collect information about health facility coverage and access by the district population and alternative preferred sources of child care and treatment. The second section was directed to mothers and aimed to collect information on socio-demographic characteristics of the family, symptoms and duration of the illness. The mothers were asked about the reasons for preferred type of care sought during the child's illness and also assessed for their knowledge about the danger signs of childhood illness. The questions on the knowledge about dangers signs were adopted from the questionnaire of UNICEF multi-indicator cluster survey (UNICEF, 2001).

An exit interview was conducted to patients for service satisfaction, caregivers' seeking behaviour and knowledge of childhood illness danger signs. All health workers who had

performed children consultations were interviewed to collect information on their demographics, cadre, pre-services and in-service training, work experience and checklist incorporating IMCI algorithm for clinical officers and caregivers.

A health facility assessment was undertaken to record the availability of equipment, availability of IMCI essential drugs, facility services, IMCI supervision visits in the past 6 months, availability of job aids and availability of IMCI trained staff. The availability of these listed items in the health facility was used to establish a categorical classification of health facilities' capacity to provide IMCI services. A facility was classified as having adequate capacity for IMCI case management if it has all the items. Community members who were parenting under-five children and community leaders residing in villages without health facilities and received vaccinations through the outreach vaccination program were involved in focus group discussion and in-depth interview for qualitative data collection. A FGD guide was used to lead discussion with community members at each of the randomly selected villages. One FGD was done in each district based on the methodology described by Dawson *et al.* (1993). The FGD was designed to capture community experiences of accessing health care services during acute illness and or follow up of routine health services.

### Sample size and sampling

All health facilities providing outpatient care were considered in the sample and calculated the sample size based on the assumption that 90% of all health facilities in the three districts were providing services at the time of evaluation. The sample size for participants of FGDs and Key informants interview were selected using nominal approach. Three village leaders were asked to provide 12 names (six males and six females) of persons who were either parents or caregiver of under-five children and were willing to participate in the discussion. All three groups of names were compiled and the data collectors selected 12 names at random to participate in the FGD. Key informants were consented by convenience into the study.

### Data analysis

Quantitative data were entered and processed into Epidata database and transferred into STATA version 10.0 for analysis. The analysis was done at univariate, bivariate levels for measuring independent association between factors related to service provision readiness and availability. The descriptive statistics were presented using tabular and graphical forms and statistical levels of significance (p=0.05) was used. The degree of association of clinical officers' performance in the assessment of the sick children and adherence to IMCI protocol during sick child assessment was tested using the Fisher Exact test. The computed p-value were compared with a 5% level of significance (Alpha level=0.05).

### Ethical consideration

The study had scientific and ethical approval from the Ifakara Health Institute (IHI) Ethical Review Boards (IHI/IRB/No: 12-2013). Permission was sought from Regional and District authorities and health facilities in-charges. Written informed consent for participation was obtained from all study participants.

### Results

A total of 27 health facilities were involved in the study: 8 from Ruangwa, 12 from Lindi District and 7 from Kilwa. The quantitative and qualitative analysis used for assessing IMCI services were divided into four main categories: Infrastructural adequacy for the provision of IMCI services, Essential medicine availability, performance of clinical officers using IMCI case management algorithms and Factors influencing community treatment.

### Infrastructure adequacy for provision of IMCI services

All health facilities visited had adequate room space and furniture for patient examination. However, the majority of the hospitals (67.7%) and health centres (55.6 %) had no space for record keeping. Some of the health centres 6 (66.7%) and dispensaries 9 (60.0%) reported not providing services in all the scheduled working hours (Table 1).

**Table 1: IMCI key infrastructure availability in hospital (HS), health centre (HC) and dispensary (DS)**

| Key Infrastructure Items | HS (%) | HC (%) | DS (%) |
|---|---|---|---|
| Adequate patient examination room | 3(100) | 9(100) | 15(100) |
| Chair for health worker and caretaker available | 3(100) | 9(100) | 15(100) |
| Respiratory Timing device available | 0 | 1(11.1) | 1(6.7) |
| Adequate space for immunization | 3(100) | 8(88.9) | 14(93.3) |
| Functioning refrigerator or ice packs | 3(100) | 7(77.8) | 11(73.3) |
| Health facility not open during scheduled working hours | 0 | 6(66.7) | 9(60.0) |
| Health facility have space for patient record keeping | 1(33.3) | 5(55.6) | 11(73.3) |
| OPD-HMIS number 5 properly filled | 1(33.3) | 4(44.4) | 11(73.3) |

### Availability of health workers

As regards to the distribution of clinical officer, Kilwa had 21 for 57 facilities, Ruangwa had 16 for 37 health facilities and Lindi rural had 25 for 49 health facilities. Kilwa District Hospital had 19, Ruangwa 21 and Lindi 22 nursing staff. Dispensaries in Kilwa had the highest number of medical attendants (who are not considered as professionally trained cadre) compared to dispensaries in Lindi Rural and Ruangwa Districts (Table 2).

**Table 2: Availability and distribution of health care providers in Kilwa, Ruangwa and Lindi Districts**

| Cadre | Kilwa | | | Ruangwa | | | Lindi | | |
|---|---|---|---|---|---|---|---|---|---|
| | HS | HC | DS | HS | HC | DS | HS | HC | DS |
| No. of facilities | 2 | 5 | 50 | 1 | 4 | 32 | 1 | 6 | 42 |
| Medical doctor | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Assistant Medical Officer | 3 | 0 | 0 | 8 | 0 | 0 | 15 | 0 | 0 |
| Clinical Officer | 9 | 5 | 7 | 6 | 2 | 8 | 3 | 3 | 19 |
| Assistant Clinical Officer | 0 | 0 | 1 | 1 | 0 | 4 | 2 | 4 | 8 |
| Registered Nurse | 19 | 4 | 0 | 21 | 2 | 1 | 22 | 0 | 1 |
| Enrolled Nurse | 26 | 7 | 12 | 17 | 7 | 21 | 13 | 17 | 35 |
| Medical Attendant | 48 | 27 | 104 | 23 | 7 | 42 | 80 | 15 | 41 |
| Laboratory Technician | 3 | 2 | 0 | 3 | 0 | 0 | 6 | 4 | 0 |

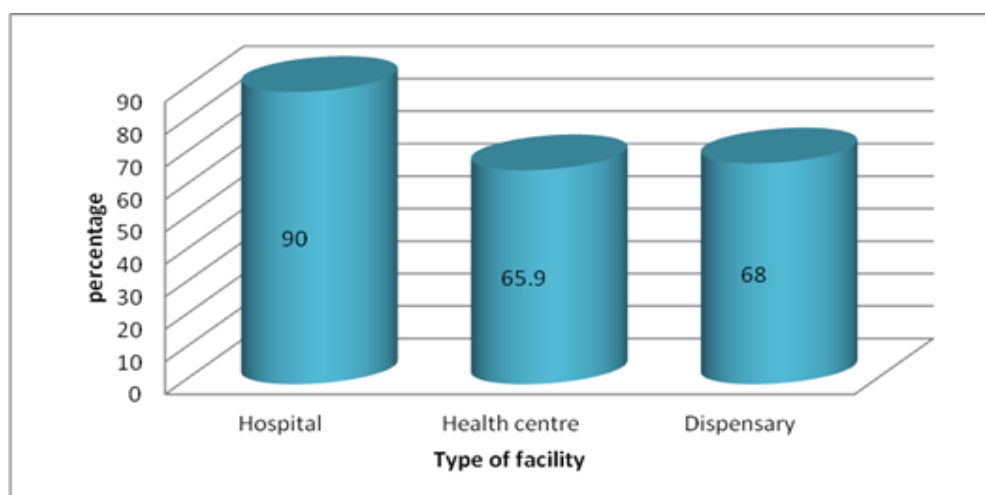**Key:** HS=hospital; HC= Health Centre; DS= dispensary

**Figure 1: Percentage of IMCI items present at health facilities by facility type**

All the three district hospitals were found to have full capacity of all IMCI equipment and items with exception of IMCI recording forms and mother's card which were not available in one hospital. Overall, hospitals had almost all the IMCI essential items. However, health centres and dispensaries possessed only 65.9% and 68% of the IMCI essential items and equipment respectively (Figure 1). Supplies to constitute administer oral rehydration solution was available in only 44.46% of 9 health centres. Similarly IMCI recording forms and diarrhoea treatment were available in 3 (37.5 %) and 5 (55.6%) health centres, respectively (Figure 1).

### Availability of essential medicines

The drug stock status in hospitals was adequate in terms of availability of at least one of the essential medicine types (Table 3). Penicillin injection was available in all three hospitals, while Gentamycin injection was only available in one hospital. On the contrary, health centres and dispensaries were found to have a serious shortage of essential medicines. Oral antibiotics of Amoxicillin and Ampicillin formulation were available in 7 (46.7%) and 1 (6.7%) out of 15 dispensaries visited, respectively. Similarly Metronidazole and Cotrimoxazole were available in only 6 (66.7%) and 7 (77.8%) health centres, respectively and 6 (40 %) and 10 (66.7 %) dispensaries respectively.

**Table 3: Number (%) of health facilities with stock out of essential medicine**

| Medicine | Hospital (%) | Health Centre (%) | Dispensary (%) |
|---|---|---|---|
| Injectable penicillin | 3(100) | 6(66.7) | 10(66.7) |
| Injectable gentamycin | 1(33.3) | 3(33.3) | 3(20.0) |
| Sterile water for injection | 3(100) | 7(77.8) | 15(100) |
| Intravenous fluid for severe dehydration | 3(100) | 7(77.8) | 14(93.3) |
| Intravenous administration sets | 3(100) | 6(66.7) | 14(93.3) |
| Oral Rehydration Solution | 3(100) | 8(88.9) | 14(93.3) |
| Zinc sulphate | 1(33.3) | 2(22.2) | 2(13.3) |
| Oral antimalarial drugs | 3(100) | 5(55.6) | 10(66.7) |
| Injectable antimalarial drugs | 3(100) | 5(55.6) | 8(53.3) |
| Amoxicillin | 3(100) | 4(44.4) | 7(46.7) |
| Ampicillin | 3(100) | 4(44.4) | 1(6.7) |
| Iron sulphate | 3(100) | 4(44.4) | 10(66.7) |
| Folic acid | 3(100) | 5(55.6) | 12(80.0) |
| Paracetamol | 1(33.3) | 7(77.8) | 10(66.7) |
| Diazepam(Valium) | 3(100) | 5(55.6) | 11(73.3) |
| Metronidazole | 3(100) | 6(66.7) | 10(66.7) |
| Cotrimoxazole | 3(100) | 7(77.8) | 6(40.0) |

### Performance of clinical officers using an IMCI case management algorithm

None of the clinical officers observed, assessed sick children for all items in the IMCI checklist. Fever, difficult breathing and diarrhoea were the most frequent symptoms assessed by clinical officers. However, other children who were not assessed by providers were found to have cough and or difficult breathing (73.2%) and vomiting everything (63.2%) at exit interviews assessment. Exit interviews revealed that majority of caregivers left the clinician consultation rooms without knowing the classification and treatment identified for their sick children. Incomplete caregivers counselling and lack of prescribed medicine information was observed across the health facilities assessed. For example at Ruangwa district Hospital, two mothers were given an unlabelled bottle of syrup to share and were not told the name of the medicine.

In comparison a high proportion of children were not assessed for danger signs. More than 50% of children attended by IMCI trained clinical officers and more than 70% of children attended by non-IMCI trained clinical officers were not assessed for danger signs. In assessing the history of convulsing at the time of consultation, IMCI trained clinical officers performed significantly better than the non-IMCI trained clinical officers (Fisher's Exact test p-value of 0.037 at 95%CI) (Table 4).

**Table 4: Comparison of clinical officers' performance in assessment of the sick children.**

| Variable | | IMCI trained | | IMCI not trained | | P-value |
|---|---|---|---|---|---|---|
| | | Assessed (%) | Not assessed (%) | Assessed (%) | Not assessed (%) | |
| Danger signs | Not able to drink or breast feed | 9(47.4) | 10(52.6) | 5(22.7) | 17(77.3) | 0.115 |
| | Vomiting everything | 7(36.8) | 12(63.2) | 6(27.3) | 16(72.7) | 0.737 |
| | History of convulsion or convulsing now | 9(47.4) | 10(52.6) | 3(13.6) | 19(86.4) | 0.037 |
| | Lethargy or unconscious | 5(26.3) | 14(73.5) | 4(18.2) | 18(81.8) | 0.709 |
| Main symptoms | Fever | 14(73.7) | 5(26.3) | 17(77.3) | 5(22.7) | 0.537 |
| | Cough and or difficult breathing | 15(79.0) | 4(21.1) | 15(68.2) | 7(31.8) | 0.499 |
| | Diarrhoea | 12(63.2) | 7(36.8) | 13(59.1) | 9(40.9) | 0.522 |
| | Ear problem | 12(63.2) | 7(36.8) | 4(18.2) | 18(81.8) | 0.005 |

During observation of the clinical consultation, 19 (46.3%) children were attended by IMCI trained clinical officers and 22 (53.7%) children by non-IMCI trained clinical officers. Twenty-nine (70.7%) out of 41 children were assessed for presence of danger signs and 32 (78.1%) out of 41 children received proper classification. A larger proportion of children attended by IMCI trained clinical officers received an adequate assessment compared to children attended by non-IMCI trained clinical officers.

**Table 5: Clinical officers Adherence to IMCI protocol during sick children assessment**

| Activity | IMCI Trained (%) | | IMCI not trained (%) | | P-value |
|---|---|---|---|---|---|
| IMCI training | 19(46.3) | | 22(53.7) | | |
| | Yes (%) | No (%) | Yes (%) | No (%) | |
| IMCI protocol followed | 13(68.4) | 6(31.6) | 4(18.2) | 18(81.8) | 0.002 |
| Assessment of general danger signs) | 15(79.0) | 4(21.0) | 14(63.6) | 8(36.4) | 0.325 |
| Proper classification done | 16(84.2) | 3(15.8) | 16(72.7) | 6(27.3) | 0.466 |
| Appropriate treatment given | 12(63.2) | 7(36.8) | 4(18.2) | 18(81.8) | 0.005 |
| IMCI case record form or chart booklet used | 13(68.4) | 6(31.6) | 2(9.1) | 20(90.8) | 0.003 |

***Factors influencing community treatment***
Caregivers' awareness of danger signs and or symptoms of childhood illness were relatively poor. Only 14 (26.9%) out of the 52 caregivers assessed, mentioned symptoms and signs like not able to drink or breast-feed; 29 (55.6%) mentioned child becomes more sick, 19 (36.5%) reported high fever and 5 (9.6%) mentioned difficulty in breathing. Only four (7.7%) and two (3.9%) mentioned poor drinking and blood in stools, respectively. Discussion with community leaders highlighted distance to health facility as the major factor that affect timely health care seeking. Nineteen (76%) out of 25 caregivers living within 5 km from the health facility termed care received as "appropriate" during the childhood illness, whereas only 7 (28 %) sought appropriate and prompt care. Overall 41 (68.3%) of all caregivers interviewed sought appropriate care (Table 6).

**Table 6: Distance to the nearest health facility and care seeking pattern**

| Distance | Appropriate care N=60 (%) | | Appropriate and prompt care N=60 (%) | | Prompt Care N=60(%) | |
|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No |
| Within 5 km | 19(76.0) | 6(24.0) | 7(28.0) | 18(72.0) | 8(32.0) | 17(68.0) |
| 5-10 km | 9(69.2) | 4(30.8) | 4(30.8) | 9(69.3) | 4(30.8) | 9(69.2) |
| 11-15km | 5(41.7) | 7(58.3) | 4(33.3) | 8(66.7) | 7(58.3) | 5(41.7) |
| >15 km | 8(80.0) | 2(20.0) | 3(30.0) | 7(70.0) | 5(50.0) | 5(50.0) |
| Total | 41(68.3) | 15(31.7) | 18(30.0) | 42(70.0) | 24(40.0) | 36(60.0) |

Focus group discussions and in-depth interviews revealed greater insight into some of the factors influencing child health. Generally, group discussants appeared to be more aware of the danger signs or symptoms and discussed different measures taken whenever danger signs are detected. Participants mentioned child nutrition, diseases and parent education on child care as key determinants of child health. Frequent attacks of malaria, fever and convulsions were discussed as the most common causes of poor child health outcome in the communities. Community members negatively perceived health services care provided in the health facilities. Participants from all FGDs explained that shortage of medicines, lack of laboratory tests, shortage of trained health care workers, poverty, and lack of access to safe water and use of abusive language by health care providers were some of the main factors resulting into poor health care services. Additionally, traditional beliefs hindered community members to go for health care services to health facilities. FGD participants proposed different measures to be instituted in the community to improve child health care services. These included provision of health education to the communities and parents on child health care, construction of dispensaries in their respective villages, government should increase health care workers and provide adequate amounts of free medicines for sick children.

**Discussion**

This study aimed to assess the current status of IMCI services in the three districts of Lindi Region. The findings show that IMCI is being implemented at various levels of health facilities in Lindi region. Most of the health facilities visited were found to have more than half of the necessary IMCI infrastructures, items and equipment to adequately implement the services according to protocol. In spite of the large numbers of trained service providers, our results show slightly over half of the clinical assessments were carried out by non-IMCI trained clinical officers. Similar findings have been reported in another study in Rwanda (MOH, 2008). Reasons attributing to the findings include massive out migration of health providers from the region, in which trained providers migrated to other regions. Other reasons, there are always more lower level cadres health workers (medical attendants and nursing aides) in rural health facilities who interface with patients with common illnesses compared to doctors or medical officers or clinicians. This is because the health sector is facing a serious human resource crisis that negatively affects the ability of the sector to deliver quality services (Musau et al., 2011). Hence, empowering the nursing cadre in provision of clinical consultation as an alternative to shortage of clinical officers can safeguard life of children in many rural and remote areas.

Supportive supervision in implementing IMCI services is essential in improving clinician performance (Kiplagat et al., 2014). The IMCI supervision has to be done at least once in each quarter of the year by the districts. However in 2012, supervision was carried out only twice for most facilities and once for some. In this study, more than half of the children attended by IMCI trained clinical officers were not assessed for danger signs. Most clinical officers consistently did not apply comprehensively the essential activities required according to IMCI case management algorithm. Similar findings have been recently reported in Mwanza (Kiplagat et al., 2014). The

supervisors were not fully supportive in the implementation of IMCI and the reasons as to why health care workers felt their supervisors not fully supportive were lack of regular supportive supervision and mentoring on IMCI approach at the sites/health facilities. This calls for implementation of refresher courses and on-site monitoring. The relationship between poor performance of clinical officers and IMCI supervision was not established because of the limitations of the assessment and difficulty in establishing the nature of supervision.

The widespread stock outs of essential medicines compromised both patient clinical attendance and performance of health workers. Stock outs of these essential drugs and supplies recommended to be used as per IMCI guidelines may discourage the health workers in the implementation of IMCI in their work place. The need to strengthen capacity of health care workers to implement IMCI and support of the supply of essential drugs and supplies has also been noted by the government of Tanzania and other development partners (Kiplagat *et al.,* 2014). Findings from previous studies have shown that health worker performance is adversely compromised when the amount of clinical practice indicated in IMCI training is reduced (Arifeen *et al.,* 2005).

Results from FGD present an important opportunity to introduce community IMCI services to other rural areas. This is due to the high degrees of acceptability by the community members along with the feedback recommendations obtained from FGD. Communities without health facility within reach have a great desire towards establishment of health care services within their villages. This includes provision of health education to the communities and parents on child health care, having community based health care workers and construction of dispensaries in their respective villages. This entails that the community members are ready to provide the needed support to establish health care services within their villages. The presence of village health committees lead by village leaders means the political will is already in place to support any community based health care and treatment program. Preference of traditional medicines over modern medicines was one of the factors identified to potentially influence the health status of the community. Most often in rural areas, treatment for illness is sought only after home remedies have failed. In this study, large proportion of the respondents on the survey provided home treatment before seeking care elsewhere. The types of remedies varied and were influenced by available sources. These findings are similar to studies conducted in Malawi and Sierra Leone (Vaahtera *et al.,* 2000; Diaz *et al.,* 2013).

During the FGD, participants clearly stated that symptoms like convulsions, lethargy and changes in breathing pattern were only treated by traditional healers. Some used medicines kept at home, some purchased from a drug store and others used herbal medicines. However, these findings contradicts with a study in Ethiopia where multiple symptoms and severity of child illness influenced seeking first treatment from higher level modern health care facilities (Tufa *et al.,* 2016). These differences can be explained by other factors such as community perception of illness, health facilities readiness to provide the needed care and behaviour of health workers (Ogunlesi & Olanrewaju, 2010). In this study, participants complained about use of abusive language by health care workers. Such expressions strain the relationship between the community and health providers and eventually drive community preference for traditional medicines. This finding contradicts with a study in rural Niger where socio-economic factors were found to have direct influence in utilization of modern health care (Katung *et al.,* 2001).

Health system's shortcomings identified by this assessment have serious impact on the community's trust on health care workers. Although the study shows that high proportion of the exit interview respondents were satisfied with the services provided, problems such as lack of health workers, shortage of essential medicines and distance travelled to reach health facilities will have a huge impact on community child care practices and uptake of health services. All health facilities assessed were found to be lacking some of the key health system readiness indicators. The infrastructural inadequacies, shortage of health care providers, inadequate availability of IMCI items and essential medicines recorded in this study shows that it is unlikely

that districts are capable of implementing IMCI effectively without external support (TEHIP, 2000). IMCI has been shown to improve care of children at first level (TDHS, 2010; Amaral *et al.*,2004; Arifeen *et al.,* 2004) but poor adherence to IMCI guidelines has been repeatedly described (Schellenberg *et al.,* 2004; Pariyo *et al.,* 2005; Arifeen *et al.,* 2005). If IMCI implementation is to achieve sufficient coverage to make a difference on child morbidity and mortality, it is critical that strategies are developed to achieve and maintain high quality health worker performance.

This study had important limitations. A major limitation of this study was its small sample size, over representation of health workers from health facilities due to resource constrain, therefore making the study to be underpowered. A larger sample might have revealed more significant relationships. Other limitation was the method of directly observing health workers may have influenced their performance either making them anxious or motivating them to perform better than usual.

The implementation of IMCI services in the three districts of Lindi region experienced multiple challenges despite the availability of adequate infrastructure for programme implementation. This calls upon the stakeholders to implement targeted strategies such as supportive supervision, constant provision of medical supplies and training of IMCI health workers to improve services delivery to sick children. In addition community level promotion of prompt modern health care seeking behaviour is essential to enhance childhood illness care and treatment.

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