

## Household Integration Care: A Potential New Strategy in Improving the Integrated Community Case Management of Childhood Illnesses

Ndugbu Kizito<sup>1\*</sup>, Chukwuocha Adanna<sup>1</sup>, Nzeribe Emily<sup>1</sup>, Enebeli Ugo<sup>1</sup>, Igwe Chidinma<sup>2</sup> & Chukwuocha Uchechukwu<sup>1</sup>

<sup>1</sup>*Department of Public Health, Federal University of Technology Owerri, Imo State, Nigeria*

<sup>2</sup>*Department of Public Health, Imo State University, Owerri, Nigeria*

\***Correspondence to:** Ndugbu Kizito, Department of Public Health, Federal University of Technology Owerri, Imo State, Nigeria.

### Copyright

© 2019 Ndugbu Kizito, *et al.* This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received: 14 May 2019

Published: 08 July 2019

**Keywords:** *Household Integration Care; Childhood Illnesses; Malaria; Pneumonia; Diarrhoea; Integrated Community Case Management*

### Abstract

Malaria, Pneumonia and Diarrhoea have together caused most childhood deaths particularly in resource poor underserved areas though they are preventable. The Integrated community case management (ICCM) strategy has been adopted to improve access to treatment of children at risk of these diseases. The strategy builds on previous child survival programmes to achieve its objectives and has actually achieved some results. However, the increasing cases of poor referral, irrational use of drugs, delay in care-seeking and the obvious passive disposition of care-givers have continued to hamper the effective implementation of the ICCM. The community dimension of ICCM has not been explored. This is because the family or household setting which is unarguably the first point of care has not been fully integrated. This affects any clear-cut definition of the roles of Community Health Workers, amidst the obvious difficulty in equitably covering the three diseases. More success and sustainability of the ICCM will be achieved by integrating the household in the strategy. This

can be achieved by training of household members in simple ways of recognition of these diseases, correct immediate actions to take and when a prompt referral should be done. The training will also involve knowledge of what to expect and ability to demand such when a visit is made to formal health facilities or drug shops. A simple algorithm that explains the correct steps to take in the event of a childhood illness provided the households will also aid in guiding them to take such steps. This paper provides justifications for the necessity of adopting the Household Integration Care (HIC) as a component of the ICCM. This will fill the gaps and optimize the efficiency of efforts towards sustainable management of childhood illnesses. The integration of the household into the ICCM would importantly make family members responsive and responsible to healthcare decisions and provisions, while correctly situating the role of CHWs as facilitators. The effect of this would be the cultivation of self-referral, seeking appropriate care promptly at appropriate places as well as rejection of wrong care practices at formal and informal care centres.

## Abbreviations

ACT	- Artemisinin Based Combination Therapy
ARFH	- Association of Reproductive and Family Health
CCM	- community case management
CHWs	- Community Health Workers
EU	- European Union
HBMF	- Home Based Management of Fever
HIS	- Household Integration Strategy
ICCM	- Integrated Community Case Management
IMCI	- Integrated Management of Childhood Illnesses
LGAs	- Local Government Areas
MUAC	- Mid upper arm circumference
ORS	- Oral Rehydration Salt
RDTs	- Rapid Diagnostic Tests
UNICEF	- United Nations Children Emergency Fund
WHO	- World Health Organization
VHT	- Village Health Team

## Background

Three diseases namely; malaria, pneumonia, diarrhoea cause three quarters of deaths in children under five years of age [1], despite being preventable and curable. The reasons are not farfetched as there are inequities in the management of these illnesses. In sub-Saharan Africa, only 39% of children receive correct treatment of diarrhoea, only 30% of children with suspected pneumonia receive antibiotics [2], and only 16% of children with *Plasmodium falciparum* malaria receive correct treatment [3]. Such is often the case, that access to quality health care is hardest in areas where the need is greatest. In many rural communities, distance and poverty is a big reason for a sick child not making it to the nearest health facility in time to receive appropriate treatment.

Despite the discovery of the correct treatment of childhood pneumonia, diarrhoea and malaria being one of the greatest interventions towards reducing child mortality [4] and the new preventive interventions - especially pneumococcal conjugate and rotavirus vaccines; it was evident that facility-based service delivery was not doing enough. It was not adequately providing and sustaining treatment [5]. There was need then to take curative care to homes and communities where access to facility-based service is low. There was a great need to create a platform for acceleration of the management of childhood diarrhoea, pneumonia and malaria, prominent childhood killer diseases. This is the background that informed the World Health Organization (WHO)/ United Nations Children Emergency Fund (UNICEF) joint statement that established the Integrated Community Case Management of childhood illness.

The Integrated Community Case Management (ICCM) of childhood illnesses has a hybrid origination, as many factors and communities came to birth it as a policy engagement over various phases of collaboration. A major contributive factor to its establishment was the multiple country evaluations that pointed out the failures of previous child survival initiatives. Studies and subsequent evidence showed the significant impact taking treatment to the community level can make towards reducing child mortality from malaria, pneumonia and diarrhoea [6,7]. Thus, from 2004 ICCM was endorsed as a strategy for training and supporting workers at the community level to provide treatment for the three major childhood diseases - diarrhoea, malaria and pneumonia- as a compliment to facility-based care. ICCM was therefore, aimed at extending the treatment of childhood illness from health facilities into communities [8] and supporting existing community health workers, which will in turn lead to increase in access and coverage of treatment [9].

Many countries, especially the developing countries have and are struggling to implement the ICCM strategy. In Nigeria, the Association of Reproductive and Family Health (ARFH) is implementing the EU-UNICEF supported ICCM of childhood illnesses in Adamawa and Kebbi states, this project was signed on the 30<sup>th</sup> of September, 2014 and activities commenced on October 1, 2014. ICCM is being implemented in 801 communities spread across 20 LGAs and 11 wards in Adamawa state, and 725 communities across 21 LGAs and 153 wards in Kebbi state.

In some of the countries, there have been evidences of significant success with the ICCM strategy as regards access to treatment, improved rational use of drugs. However, there is yet to be a significant reduction in mortality from these diseases. Many factors have been highlighted and they general point to the nature of the countries' health system. A further look at this is likely to show that the lack of baseline data on treatment source in household surveys limits efforts to evaluate the effects of the introduction of ICCM strategies in the study countries. This questions how much the households have been involved in the ICCM, not just as care-givers but as care-providers. What is their role? Can they not be trained, supported and supervised to really begin the non-severe treatment at home, especially in countries like Nigeria where the ICCM is still exclusive of those with medical training who would only stay at formal health facilities, leaving the rural dwellers the greater alternative of *sampling* treatments till it gets late?

## Components of Integrated Community Case Management

Improving access to treatment for the febrile child has been a priority in low income countries for a long time, with the strategies used evolving over time.

In 1996, the Integrated Management of Childhood Illnesses (IMCI) strategy was initiated with the following objectives: to reduce infant mortality; to reduce the incidence and severity of childhood illnesses; and to improve growth and development during childhood. The objectives were to be achieved through improving health worker skills, strengthening the health system and improving family and community care practices (community IMCI). While IMCI was shown to improve health worker performance and quality of care [10], it did not achieve the expected impact on mortality mainly due to delayed care seeking [11].

In order to improve the treatment seeking practices for sick children under IMCI, community case management (CCM) was recommended, to complement the health facility based services. CCM includes treatment of sick children at the community level and promotes timely care seeking and referral to health facilities. From 2002 the Home Based Management of Fever (HBMF) strategy promoted presumptive treatment of all fever with antimalarial drugs in the community, with support from WHO and UNICEF. However, due to the finding of multiple illnesses in children, delayed care seeking for non-malaria fevers and symptomatic overlap of malaria, pneumonia and diarrhoea, WHO and UNICEF now recommend integrated community case management of malaria, pneumonia and diarrhoea in children (ICCM).

The main components of the ICCM strategy include: supplying Community Health Workers (CHWs) with a kit of pre-packaged medicines and commodities including diagnostic tools; CHWs mobilizing communities to demand, support and use the ICCM intervention; CHWs treating children under five with fever, cough and diarrhoea and counselling mothers on home care and care seeking; CHWs referring immediately newborns with danger signs and severely ill children and giving pre-referral rectal artesunate for severe malaria; CHW collecting ICCM data and reporting timely; peer supervision amongst the CHWs; and trained health facility staff managing referred cases and supervising CHWs in their catchment area and monitoring program progress.

The contents of the Village Health Team (VHT) kit for ICCM include: Pre-packaged medicines for malaria, pneumonia and diarrhoea including amoxicillin for non-severe pneumonia, Artemisinin Based Combination Therapy (ACT) for uncomplicated malaria, low-osmolarity Oral Rehydration Salt (ORS) for diarrhoea, Zinc for diarrhoea and rectal artesunate for pre-referral treatment of patients with severe malaria; diagnostic commodities e.g. respiratory timers, Mid upper arm circumference (MUAC) tape; and user items e.g. job aid cards.

The concept of a community health worker programme goes back to at least the 1800s in Russia, according to a study in the *New England Journal of Medicine*. By 1975, the World Health Organisation described community health workers (CHWs) as a “key to health care’s success” [12]. As such, community health workers became defined as workers who provide health education, basic preventive care, referral and follow-up, case management, and home visit services to communities [13].

Building on previous child survival programmes, ICCM raises the role of CHWs in Primary Care and supports them in delivering basic curative care at households and /or community levels. With such moves, ICCM hopes to improve access to life saving treatment for sick children in rural communities and resource-constrained health systems, and so address large inequities in coverage of essential child health interventions and galvanize efforts to decrease child mortality. This is championed by the components of ICCM [3];

## **Coordination and Policymaking**

Here, the emphasis is on Needs assessment and situation analysis for community-based treatment services, including geographical mapping of communities suitable for ICCM. It involves the relationship between ICCM and broader health systems. It works towards the development of ICCM policy as an incremental process.

## **Cost-Effectiveness and Financing**

Costing exercise to ensure that necessary financing is secured. As a result of the funding problems with the ICCM strategy for implementing countries, there is the suggestion of encouraging use of scarce resources based on evident-based policy decisions.

## **Human Resources**

Here, the central place of CHWs is highlighted as regards what properly training, motivating, and supervising them could mean for the entire ICCM policy. Use of technology to CHWs in their catchment place, and appropriate integration into the broader public health context through expansion of responsibilities are encouraged.

## **Supply Chain Management**

Appropriate 'child-friendly' medicines and supplies for ICCM included in the national essential medicines list; and procurement plan. Also, approaches towards improving supply chain functionality and private sector efforts to improve availability of needed medicines are highlighted in this component.

## **Service Delivery and Referral**

Appropriate guidelines for clinical assessment, diagnosis, management and referral, including plans for rational use of medicines (and Rapid Diagnostic Tests (RDTs) where applicable); and referral and counter-referral system for ICCM.

## **Communication and Social Mobilization**

The preoccupation here is on the relationship between the ICCM programmes and the care-seeking and treatment utilization of available health services. This emphasises on the need to engage and empower community members to taking on new healthy behaviour; setting appropriate and realisable expectations for the care-givers and building their trust in the ability of the CHWs to deliver care.

## **Supervision and Performance Quality Assurance**

This component is concerned with ensuring the plan and appropriate tools to support effective supervision; trained supervisors; and resources (e.g., vehicles, fuel) to conduct supervision and provide skills coaching to community health workers.

## Monitoring and Evaluation

Emphasis is on how routine monitoring could help drive ICCM goals and get it integrated with other health systems. It is concerned about how data from various sources can be beneficial in health decision-making at all levels, such that given birth to new innovations the agenda of ICCM could be impactful. Thus, it involves comprehensive monitoring framework and system for all CCM components, integrated within the national health sector plan and health information system; and operational research agenda for ICCM.

## The Good and Gaps of Integrated Community Case Management of Childhood Illnesses

### The Good in ICCM

There is a growing body of evidence that ICCM can reduce child mortality. As programmes are being scaled up across the African continent, a large amount of information is being gathered on the strengths and limitations of this approach.

From several countries' experiences the ICCM approach increases the number of children receiving appropriate care in hard-to-reach communities. Several studies of ICCM showed a 35% reduction in deaths as a result of pneumonia and overall estimated that high levels of ICCM coverage could result in a 70% reduction in pneumonia-related deaths in children under five [14-19].

Studies conducted in Nepal showed a reduction in both case fatality for acute diarrhoea, and severe pneumonia, this is side by side an increased access of rural dwellers to treatment [20-22]. In Pakistan, the implementation of the ICCM by the Lady health workers (LHWs) model improved care givers knowledge about symptoms identification, it equally improved health facility use and reduced child mortality [23,24]. Such was the same in Bangladesh [25].

In Uganda, the gains of ICCM was observed severally in increased treatment coverage for diarrhoea, malaria and pneumonia, mitigation of the national stock outs of recommended medicine and improved timeliness of treatment and consequent increased lives saved [26-28].

In Mozambique, Rwanda and Malawi, ICCM became not only part of an upgrading of community services but also accessibility to prompt treatment increased significantly [29-32].

The ICCM, results from Zambia, Ethiopia, Ghana and Nigeria points to an increase in care-seeking behaviour, improved dispensing practice by trained CHWs, increased referral of severe cases, decreased irrational use of drugs, and consequent reduction in child mortality from the three child killer diseases [33-37].

Summarily, the benefits accruing from the implementation of ICCM by most countries include:

- Increase in care sought from CHWs for children with fever and decrease in care at formal health centers. Even though, for children with fast/difficulty in breathing, an increase in care from CHWs was only noted in areas where CHWs were trained and supplied with amoxicillin to treat non-severe pneumonia [35].

- Increased geographic access for underserved areas
- Expanded service hours
- Improved care seeking
- Reduced use of traditional healers
- Reduced morbidity and mortality for childhood illness
- Reduced cases of severe illness
- Improved long-term social and economic development
- Reduced caseload at facilities
- Cost savings through shifting use to the community
- Reduced strain on health facility staff (Callaghan *et al.*, 2014).

### **ICCM: The Gaps**

Despite the gains of the implementation of the ICCM, there are still many gaps in our understanding of the optimal approaches to the implementation, scale-up, and sustainability of ICCM programs. This is because while in some places, ICCM is part of an upgrading of community services (Niger, Mali, Mozambique, Malawi), it aims to build on a foundation of volunteers in others (Burkina Faso, Kenya) [32]. These gaps may be seen in the following areas;

#### ***Absence of Clear Overarching ICCM Policy to Address the Child Killer Diseases***

As important as policies are influenced by the history and nature of Primary health care and nature of CHWs [38], there has been a noticeable slow attitude towards coming up with clear implementation policy among most countries of the developing World [39]. To know that this is happening despite the provision and availability of guidelines and international support agencies is unfortunate.

#### ***Weak Coordination and Scale-up***

Effective implementation requires policy support. There have been instances of communities not being involved in policy formulation, incoherent global and local influences on policy, of doubts about the transferability of evidence of ICCM effectiveness from other countries, of limited local evidence, as such delaying policy. Also, resisting granting prescribing rights to trained CHWs [40] hampers proper service delivery of ICCM. Indeed, reliance on NGOs and donor funding has led to geographic distortions and scaling up, alongside challenges in harmonization [29].

#### ***Inadequate Training and Proper Supervision of CHWs***

As dangerous as little knowledge can be, inadequate training of CHWs greatly affects the delivery of ICCM. From issues of hurried training periods to non-adaptation of training materials to local contexts, especially where there is low literacy; evidences of poor knowledge of symptoms, treatment and referral practices abound [41,42]. Again, to think that only training can remedy the situation is wrong [43]. Lack of supervision of the quality of performance of CHWs, use of simplistic supervision tools, and supervision by observation method alone frustrates the realisation of ICCM goals [26].

### ***Poor Human Resource and Deployment***

CHWs as far as ICCM strategy is concerned are the first points of contact for health promotion and care services. Instances of not integrating them into other healthcare frameworks, and clear definition of responsibility, poor remuneration not only leads to high attrition rates of CHWs, it equally brings about distrust for them in the provision of care [6,44].

### ***Weak Demand Generation and Social Mobilization***

Participation is not the same as empowerment. Participation has to do with outcome, while empowerment is concerned with process; with creating opportunity for people to make options and choices. If the sole aim of ICCM is to empower communities for healthy-leadership action to improve child health, then evident lack of sensitization of the community (including key decision-makers within households) about the availability of CHW services, makes the service delivery sub-optimal [45].

### ***Poor Supply Chain Management and Financing***

Part of sustaining the gains of ICCM is to ensure its continuation. Lack of strategies that check the continuous supply of drugs, of availability of optimal products and packaging, of proactive use of community supply data is setback to any policy that wants to be taken serious. Poor supply of drugs, not only breed lack of confidence in CHWs; it has been known to encourage the patronage of drug misuse and abuse which in no small skyrockets child mortality [46]. Poor funding of ICCM policy in implementing countries is a huge hindrance to reducing child mortality, and high dependence on the promise of external funding for ICCM raises a serious doubt as to its long-term financing and sustainability [15].

### ***Inadequate Monitoring and Evaluation***

ICCM to be impactful must not be a 'stand alone'. Its goals are not fully realised in implementing countries mostly because of limited integration with other interventions implemented by CHWs. Monitoring and evaluating ICCM activities will not only check how impactful its services are, identifying key issues at stake, it also would create opportunities to identify and prioritize intervention. But the dearth of local evidence on key issues like changes in health facility use and child mortality following the introduction of ICCM at the national level [25], equity, community engagement and linkages to other sectors, professionalizing CHWs, and properly integrating households in the ICCM strategy; had not only hampered the policy process but also, stifled the opportunity to prioritize intervention and slowed correct action.

## **Household Integration Care (HIC)?**

Integrated Management of Childhood Illness (IMCI) launched in the mid 1990s was shown to have improved health worker performance and quality of care [47-49], yet it did not achieve the expected impact on mortality mainly due to delayed care seeking [50]. This contributed to the ICCM initiative, a strategy of taking health care delivery to the community level, engaging people at the community in the fight to manage the major child-killer diseases: malaria, diarrhoea and pneumonia.

Surely, the ICCM initiative has recorded gains as studies show [7,51,52,35]; despite the challenges from weak national health systems and poor policy support. However, the greatest challenge to properly gaining from ICCM is the proper integration of the household into the integrated community case management of childhood illnesses. No doubt, part of the problem may be the often ill-definition of home management of sick child which removes all responsibility on the care-givers placing them passively at the disposal of Community health workers [53].

The documented understanding of patent medicine sellers (PMD) as first contacts of household in care-seeking tends to exclude the fact that the care sought outside the family actually began in the house for most households, especially in sub-Saharan Africa [54-56].

Yet, it is very difficult for the typical African mother to immediately take the sick child to see any health worker or facility without first of all 'doing' something at home. Such that when a child visits a health facility it is often as a result of failed attempts at home or elsewhere to alleviate the illness.

Care of a child is a family business. A sick child as such, entails a sick family; every member of the family is seen assuming roles to ensure cure, accurately placing the parents and siblings as first care providers [57]. This is the unspoken disposition coupled with poverty and ignorance [58], that spurs a mother to run from a herbalist to a spiritual sanctuary, as has become popular in most parts of sub Saharan Africa today. By the time they would have visited a health facility, the case has become worse. Surely, ignorance plays a role, together with cultural practices, especially where the father of the house needs to give his permission for a care to be sought outside. Something about the disposition to seek care first of all at the sight of a sick child calls for the integration of the family, of the household into the ICCM strategy.

### **Understanding the Concept of Household**

A household includes all the persons who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements. (People not living in households are classified as living in group quarters).

The concept of 'household' as used in economic, healthcare, and sociological models presents it as a basic unit of analysis; of people sharing something(s) in common. But for the purposes of our preoccupation, it will be needful we conceptualize the 'household' as a family setting comprising parents, children, siblings and relatives. A setting where self-efficiency belief is a common pathway through which psychosocial influences affect health functions. As such, at the slightest bout of fever, the mother especially needs no permission to get uneasy and possibly would 'do' something to bring about a change [44]. Of what, a family would do, going to the hospital is predominantly not the first cause. This is the strength of the self-efficiency belief that not only makes the family an indispensable factor in integrated health care, but also foists it as the constant in a child's life.

Surely, the educational contents of intervention to manage childhood diseases aided to improve the knowledge, attitudes, and practices of the community, their being targeted at the control of specific diseases, and at a mere instructional level did not encourage the development of an integrated approach for the management of the child in the home. It rather encouraged a 'dependence' that often encouraged inappropriate care-seeking behaviours [32, 42, 53].

In the integration of the household in the management of childhood illness among the under-five we are looking at a comprehensive approach that recognizes the family as the first 'hospital' for the child, the enduring constant in its healthcare; and so the necessity to empower every member of the family- father, mother, siblings and relatives on presumptive diagnosis and treatment, on self-referrals, appropriate medicine and dosage, appropriate place for care-seeking and compliance behaviour. There are some justifications for this.

### **Household Integration as Filling the Gaps in ICCM**

First, the Household Integration Care (HIC) is not a replacement of ICCM rather a strategy to improve the ICCM. It is an innovation to fill the gaps of ICCM. This is especially so as it points out the current mistake of identifying the drug shops as the first point of care at the community. The households in rural communities are and remain the first places of care, at the outset of child illness, the members of the family feel immediately responsible and responsive towards providing care, that is why there are first aid boxes in family shelves, that is why relatives provide ideas, herbs and the likes; even when they are not appropriate. Taking this family practice and the likes into consideration in integrating ICCM has been the bane of its proper integration at the community level.

Second, promotion of key family practices and roles can aid in integrating ICCM goals. Given families' additional specific training, beyond awareness and communication can aid them to make informed decisions about treatment and referral of sick children. Bringing fathers into knowing how to identify symptoms, do presumptive diagnosis and give presumptive treatment would make it difficult for him to prevent the wife from seeking referral care when the need arises. This will not only foster right action, but also create correct expectations in care-seeking and care delivery. As such, we could have gotten closer to the underlying social, political, environmental and economic conditions where children pass their lives with their caretakers [53, 59].

Third, at a time and in cultures where every sickness has a spiritual cause; the care-seeking behaviour of household can be directed towards prompt and reliable care if they are informed, more practically provided the medicines, and actually take them home; how to take them, what to expect and why they must follow the direction given and what to do if symptoms persist. It could take the nature of encouraging and empowering families to have and know how to use pre-packaged suppositories, zinc tablets and how to prepare ORT. Such that the community health workers would serve a central role of maintaining a central store of drugs from which families restock their home supplies [60, 61, 19]. This is an activating of first aids in the family.

Fourth, given the many cases of poor incentives to CHWs, retention and shortage; integrating the family setting could aid in defining the responsibilities of CHWs. In integrating the households, the CHWs could best function as facilitators - facilitating care-seeking from health facilities combined with verbal referral

case detection [62]. CHWs as facilitators could enhance compliance with referral, correct dosage, diagnosis of symptoms behaviour, which could make a significant contribution to the reduction of child mortality [63,64].

Fifth, a family integrated management of childhood illness would not only encourage self-referral practice but also guard households from the very possible dangers of unpredictability of quality of care by private health providers [65,66,45]. Such cases as: incorrect prescription, over- and under dispensing, wrong diagnosis and sell of un-recommended or expired drugs [67,42]. Knowledge as such, becomes empowering and live saving.

Sixth, the ICCM can be seen as living on three constructs: care-seeking, appropriate treatment, and place of treatment. These could be seen as justifying the needed integration of the households as the domestic care centre. If not properly and specifically trained and educated to participate, to know what the symptoms are, do presumptive diagnosis and give presumptive treatment, and watch out for developments, and possibly do self-referral when symptoms persist; their care-seeking behaviours cannot be healthy. Of course, an unhealthy care-seeking behaviour can not lead to an appropriate treatment as it takes one to the wrong places of treatment.

Seventh, educating and training the CHWs as it is not enough. It is not enough for them to administer the right drugs [68,69], comply to protocols [70,71]. In the household integration strategy, education and training will be on-going and followed up with periodic monitoring and evaluation of outcomes. This also identifies the CHWs as the facilitators, who arming the family with simple algorithms steps down the acts and actions at the outset of childhood illness. The training will be integrative as against episodic care so as to prevent the desperate disposition that naturally draw households to drug sellers who often sell and give inappropriate and incorrect prescriptions [72,73].

### **Implementing the Household Integration Care (HIC)**

Household Integration Care as an integrative model to drive ICCM to the grassroots dwells on four constructs: encouraging household proactive involvement in child health care-seeking and delivery, identifying the role of CHW as facilitators, growing self-referral attitude in households and creating right action and correct expectation from health care acts and activities.

The implementation of the HIC will be in three steps, involving the household members and the CHWs. In the first step, household members from the father to the knowledgeable child will be educated and trained to distinguish and recognize very simple signs and symptoms of childhood illness. For instance, as all fever is not malaria or pneumonia; households will be educated and trained to identify signs and symptoms of malaria in fever if it presents with rigour, unusual loss of appetite, stiff neck or bulging fontanel; of pneumonia in fever when the child has difficulty in breathing; and see signs and symptoms in a child who presents with restlessness, irritability, drinks eagerly and thirsty with skin pinch going back slowly. So, identified, households are educated to apply a presumptive treatment of correct medicine, in right dosage and follow up the treatment, by taking note of any reaction subsequently for 48 hours. Such that if after 48 hours, they should naturally know that a higher treatment is needed. This is the training in self-referral, seeing the need to having done the first essential.

Of course, at the referred facility, drug shop or hospital; the training of the household is such that empowers them to not only do the right thing, but also to expect correctly. So at the facility, they will be able to say what they have done, and know what they need and demand for it. As such, they should demand for RDTs, respiratory timers and thermometers use before prescription. And when those prescriptions are not the recommended ACTs, amoxicillin and zinc medicines; and are prepared not to compromise. This is to mitigate the possible instances of poly-pharmacy at the drug shops and inappropriate treatment at health facilities.

The second step of the training will be focused on the CHWs. Different from what obtains, they will be trained to aptly assume and function effectively in the roles as facilitators. They are to be partners with households in ensuring that pre-packaged drugs are in continuous supply, compliance to treatment protocols followed, counter-referral from health facility the households are referred to maintained, assess to fund to aid households access the recommended drugs made known to them. The CHWs are encouraged to see in the households an indispensable partners in service, this will not only sustain the trust they (CHWs) must exude to effectively be accepted as health givers, but also it will foster in them a sense of devotion that is often lacking today.

The third step takes a practical approach to the issue of monitoring and evaluation. It depicts the need that education for health is and remains on-going if it must be curatively ensured. At this stage, families who were educated and trained will be provided with simple algorithms that serves as reference points in managing the illnesses as they present. These algorithms will be pictorial, showing the simple signs and symptoms associated with the diseases, step by step action to be taken, how to monitor what has been done, and what to do if the illness persists. This serves as an image of reminder, balm to the nervousness that may attend at the event of childhood illness. It equally aids in clear detailing of action taken when at the referred health facility.

Last, Data is very crucial in planning, evaluation, policy making and implementation as well as effective deployment of interventions. Poor and unreliable data collection has also influenced ineffective and unsustainable realization of health goals. The household in this regard could be a source of collection and storage of reliable data as everything that happens to the child revolves around them as they are the custodian of the most reliable information about child health. Therefore household members could be trained on simple methods of data collection such as recording in note books; the time illness (symptoms) is noticed in the child, suspected illness, actions taken, drugs taken and dosages, time or recovery or otherwise, time of referral and possible death etc. Such data will now be collated by trained CHWs from the family notes and then transcribed to appropriate quarters for analysis. his data collection and management system will aid in improvements in policy making and implementation, equitable and sustained deployment of interventions as well as public health education.

As such, the implementation of HIC could be seen as improving promptness of care, discouraging irrational use of drugs, irrational patronizing of wrong places of care, improving healthy health care-seeking practice at the most volatile of places and circumstances as well as improvement in collection and management of reliable data.

## Areas of Possible Concern with Household Integration Care

Surely, through implementing the ICCM strategy by way of the household integration, we address the “know-do” gaps or delays in the discovery of effective intervention and their wide-scale application. This is likely a promising solution to the current mode of implementation which focusing on health worker training, has often neglected health systems and family dynamics at the community level. Yet, some expected concerns in integrating the household strategy into the management of childhood illness, cannot be overlooked.

First, household integration may encourage the flooding of private drug stores with un prescribed drugs for the childhood illnesses, as some studies predict [74,75], and because there is no defined function for the CHWs, regulating such flow of un-recommended drugs will be difficult. Of course, un-prescribed drugs not only lead to increased inappropriate treatment; but also encourage drug resistance.

Second, ACTs are expensive. So in a household integration strategy where distributing ACTs form part of the CHWs task, there is the danger that for a poor country it will mean an increase of expenses for malaria affecting intervention for pneumonia and diarrhoea. Similarly, considering that ACTs are expensive, the extent to which families would go to maintain use of the expensive medicine is not certain, and so raises a question on how prompt would their care-seeking be [76].

Third, given that malaria is a disease difficult to diagnose by clinical examination only; as there have been cases of over- and underestimation by health professionals [77], there is the question of how the outcome of diagnosis at the household will be? Would drugs not be administered to children who do not need them?

## Mitigating the Concerns in HIC

First, in integrating all components of child health control with the aim of unifying the implementation, monitoring of health care activities, HIC would adequately place CHW as referral facilitators, who would be the ‘one stop shop’ for the recommended medicines for each household; and would equally closely monitor financial access to treatment, treatment compliance and drug resistance. This could instil self-referral behaviour, proper care-seeking and discourage the irrational use of drugs. In ensuring that the households see the CHW as the sole distributor of recommended drugs, the household integrated strategy equally arms the care-givers at home with what to expect and what to take. So they stand a chance of knowing for example that chloroquine or fansidar is not the recommended medicine even when it is advertised on radio, or coated with appealing cover.

Second, the fact that in HIS CHWs are the community sole distributors of ACTs will go a long way to ameliorate the danger that cost may pose. First, it becomes a true test, together with proper and adequate remuneration of CHWs of any government or organizations commitment towards child health. This is not encouragement to a country spending all her health budget on ACTs-malaria intervention. No. Household integration by providing a base to truly categorise CHWs as facilitators invites the truest intentions and efforts to really make their presence needful. Again, with household integrated into ICCM, we will soon discover that what makes ACTs expensive is not really the cost of purchase, but the cost of using them irrationally. HIS is not encouraging stocking ACTs at homes rather that they be part of the pre-packs the

household receives from the CHWs. This will not only influence rational use, but also check and control flow and supply.

Third, malaria for instance is not an easy disease. That is why in HIS we are convinced that education is not enough. We believe that education with empowerment can bring about a change. It is not just about training and giving drugs, it is more about knowing that you are involved; and so no deceiving oneself.

HIS is an innovation that building on the resources of other intervention models drives the idea that, because care-givers play an active role in the health care of children [78], their role in integrating care towards managing child illness must be empowering not just participative. Empowerment has to do with process, with creating opportunity for people to make options and choices, to feel and act responsive and responsible. Only when the family members are engaged in the responsible action of initiating care provision, illness diagnosis, presumptive treatment with correct dosage and attentive monitoring of treatment, would they learn the need for self-referral, of prompt care-seeking at appropriate place, and of adherence compliance.

The essence of engaging the entire household is to encourage purposive action, to mitigate the problems of family gender roles in care seeking [79-81]. Similarly, HIS can by breaking the artificial divide between vertical approaches (which focus on specific donor agendas, disease priorities, and interventions) and horizontal ones (which aim to strengthen the overall structure and functions of the health systems) to not only enhance efficiency, but also create the enabling behavioural disposition that pushes knowing right to doing right. Part of this is looking out for simple signs and symptoms of any presenting childhood illness, and prompting taking action.

Truth is, the expected outcome of HIS will not only be improved healthcare delivery because of the empowering approach [61,19], but also a promotion of adherence behaviour; which is an important predictor of treatment outcomes.

## **Conclusion and Policy Implications**

The ICCM amidst being a distillation of case management of child-killers (Diarrhoea, Malaria & Pneumonia) into a clinical algorithm, extends the treatment of such childhood diseases from health facilities into communities; by training, supporting and supervising community health workers. All geared towards the reduction of childhood deaths from malaria, pneumonia and diarrhoea. Despite its many gains, more needs to be done. The first care providers need to be integrated, so that participation may get to empowerment; improving care-seeking, encouraging self-referral, knowing and getting appropriate treatment at appropriate place, consequently reducing childhood deaths from malaria, pneumonia and diarrhoea. This is where Household Integration Care comes in.

HIC distilling the household as a basic unit of analysis in intervention models is an improvement to the integrated community case management of childhood illnesses. It sees integrated care as shared commitment. It understands it as person-centred, coordinated and tailored to the needs and preferences of the individual and family. HIC is integrated because it builds on interventions already shown to be cost-effective towards efficiency. Governments and ministries of health should consider as policy implications of successful scale-up and sustainability of ICCM, way of integrating the household to include:

- Engage higher level policy bodies as well as child health coordinating mechanisms;
- Adapt framing to fit better with existing CHW cadres, the health systems infrastructure, and drug policy;
- Support country-specific studies that address family-practices impact questions;
- Acknowledge and discuss role of sustainable financing by facilitating the CHWs as central drug sources;
- Support better coordination and integration of services by empowering the household setting as collaborators;
- Support data collection and management at the household level and use same for more effective policy making and implementation as well as deployment of interventions.

Research activities should consider integrating households into the ICCM because both are community-based, have community level interventions linked to facility level, and are aimed at ensuring appropriate and prompt care for a sick child. Household Integration Care as part of the ICCM would strengthen care continuum and provide reliable and timely data collection of childhood illness events at the household level.

## Acknowledgements

The Authors wish to acknowledge the Community Health Workers and Department of Health Services of Owerri North Local Government Area, Imo State Nigeria who provided useful information on ongoing efforts for the management of childhood diseases which aided in conceptualizing this idea.

## Bibliography

1. WHO (2017). The partnership for maternal, new born and child health. Geneva: World Health Organization.
2. Chinbuah, M. A., Abbey, M., Krager, P. A., *et al.* (2013). Assessment of adherence of community health workers to dosing and referral guidelines for the management of fever in children under 5 years: a study in Dangme West district of Ghana. *Int Health.*, 59(2), 148-156.
3. WHO/UNICEF. *Management of pneumonia in country settings*. WHO/UNICEF Joint statement. Geneva & New York. 2004.
4. Bryce, I., Friberg, I. K., Kraushaar, D., *et al.* (2010). LiST as a catalyst in program planning: experiencing from Burkina Faso, Ghana & Malawi. *Int J of Epidemiol.*, 39(1), i40-i47.
5. Victora, C. G., Wagstaff, A., Armstrong Schellenberg, J., *et al.* (2003). Applying an equity lens to child health and mortality: more of the same is not enough. *Lancet*, 362(9379), 233-241.
6. Awor, P., Miller, J. & Petersn, S. (2014). Systematic literature review of integrated community case management and the private sector in Africa: Relevant experiences and potential next steps. *J Glob Hlth.*, 4(2), 020414.

7. Awor, P., Wamani, H., Tylleskar, T., *et al.* (2014). Increased access to care and appropriateness of treatment at private sector drug shops with integrated management of malaria, pneumonia and diarrhoea: a quasi-experimental study in Uganda. *PLoS ONE.*, 9(12).
8. UNICEF (2010). Levels and trends in child mortality report. United Nations Children's Fund New York.
9. Marsh, D. & Gilroy, K. (2008). Community case management of pneumonia: at a tipping point? *Bull WHO.*, 86(5), 381-389.
10. Horwood, C., Voce, A., Vermaak, K., Rollins, N. & Qazi, S. (2009). Experiences of training and implementation of integrated management of childhood illness (IMCI) in South Africa: a qualitative evaluation of the IMCI case management training course. *BMC Ped.*, 9, 62.
11. Black, R. E., Morris, S. S. & Bryce, J. (2003). Where and why are 10 million children dying every year? *Lancet*, 361(9376), 2226-2234.
12. Kangovi, S., Grande, D. & Trinh-Shevrin, C. (2015). From Rhetoric to Reality-Community Health Workers in Post-Reform U.S. Health Care. *N Engl J Med.*, 372(24), 2277-2279.
13. Dalglish, S. L., George, A., Shearer, J. C., Bennet, S., *et al.* (2015). Epistemic communities in global health and the development of child survival policy: a case study of Integrated community case management. *Hlth Pol Plan.*, 30, ii12-ii25.
15. Hamer, D. H. & Asha, G. (2012). Scaling up integrated community case management of childhood illness. *Am J Trop Med Hyg.*, (12), 12-0546.
16. Kalyango, J. N., Rutebemberwa, E., Alfvén, T., *et al.* (2012). Performance of community health workers under integrated community case management of childhood illnesses in eastern Uganda. *Mal J.*, 11, 282.
17. Marsh, D. R., Hamer, D. H., Pagnoni, F. & Peterson, S. (2012). Introduction to a special supplement: evidence for the implementation, effects, and impact of the integrated community case management strategy to treat childhood infection. *Am J Trop Med Hyg.*, 87(5 Suppl), 2-5.
18. Hamer, D. H., Marsh, D. R., Peterson, S. & Pagnoni, F. (2012). Integrated community case management: next steps in addressing the implementation research agenda. *Am J Trop Med Hyg.*, 87(5 Suppl), 151-153.
19. Winch, P. J., Leban, K., Casazza, L., Walker, L. & Percy, K. (2012). An implementation framework for household and community integrated management of childhood illness. *Hlth Pol Plan.*, 17(40), 345-353.
20. Sreeramareddy, C. T., Shankar, R. V., Sreekumaran, B. V., *et al.* (2006). Care seeking behaviour for childhood illness- a questionnaire survey in western Nepal. *BMC Int Health Hum Rights*, 6, 7.
21. Dawson, P., Pradhan, Y. V., Houston, R., *et al.* (2008). From research to national expansion: 20 years' experience of community-based management of childhood pneumonia in Nepal. *Bull WHO.*, 86(5), 339-343.

---

Ndugbu Kizito, *et al.* (2019). Household Integration Care: A Potential New Strategy in Improving the Integrated Community Case Management of Childhood Illnesses. *CPQ Women and Child Health*, 1(6), 01-21.

22. Ghimire, M., Pradham, Y. V. & Maskey, M. K. (2008). Community-based interventions for diarrhoea disease and acute respiratory infections in Nepal. *Bull WHO.*, 88(3), 216-221.
23. Yousafzai, A. K., Rasheed, M., Rizvi, A., *et al.* (2004). Effect of integrated responsive stimulation and nutrition interventions in the Lady Health Worker programme in Pakistan on child development, growth, and health outcomes: A cluster-randomised factorial effectiveness trial. *Lancet*, 384(9950), 1282-1293.
24. Ajmal, A., White, F., Younus, M., *et al.* (2007). Eight key household practices of IMCI amongst mothers of children aged 6 to 59 months in Gambat, Sindh, Pakistan. *J Pakis Med Assoc.*, 57, 288.
25. Arifeen, S. E., Hoque, D. M., Akter, T., *et al.* (2009). Effect of the integrated community case management of childhood illnesses strategy on childhood mortality and nutrition in a rural area in Bangladesh: a cluster randomized trial. *Lancet*, 374(9687), 393-403.
26. Awor, P., Wamani, H., Tylleskar, T. & Peterson, S. (2015). Drug seller adherence to clinical protocols with integrated management of malaria, pneumonia and diarrhoea at drug shops in Uganda. *Mal J.*, 14, 277.
27. Mubiru, D., Byabasheija, R., Bwanika, J. B., *et al.* (2015). Evaluation of Integrated community case management in eight districts of central Uganda. *PLoS ONE.*, 10(8), e0134767.
28. Nanyongo, A., SSekitooleko, J., Counihan, H., *et al.* (2015). Impact of an integrated community case management program on uptake of appropriate diarrhoea and pneumonia treatments in Uganda: a propensity score matching analysis study. *Int J Equi Hlth.*, 14, 74.
21. Garcia, D., Granjard, A., Lundblad, S. & Archer, T. (2017). A dark past, a restrained present, and an apocalyptic future: time perspective, personality, and life satisfaction among anorexia nervosa patients. *PeerJ.*, 5, e3801.
29. Chilundo, B. G., Cliff, J. L., Mariano, A. R., Rodriguez, D. C. & George, A. (2015). Relaunch of the official community health worker programme in Mozambique: Is there a sustainable basis for integrated community case management policy? *Hlth Pol Plan.*, 30 Suppl 2, ii54-ii64.
30. Mugeni, C., Levine, A. C., Munyaneza, R. M., *et al.* (2014). Nationwide implementation of childhood illness in Rwanda. *Glob Hlth Sc Prac.*, 2(3), 328-341.
31. Mugeni, C. (2011). Report of the rapid evaluation of the national community integrated management of childhood illnesses (c-IMCI) program. Kigali, Rwanda. Concern Worldwide.
32. Ebuehi, O. M. & Adebajo, S. (2011). Improving care-givers' home management of common childhood illness through community level interventions. *J Child Hlth Care.*, 14(3), 225-238.
33. Abegbunde, D., Orobato, N., Bassi, A., *et al.* (2016). The impact of integrated community case management of childhood diseases intervention to prevent malaria fever in children less than five years old in Bauchi state of Nigeria. *PLoS One.*, 11(2), e0148586.

34. Yeboah-Antwin, K., Pilingana, P., Macleod, W. B., *et al.* (2010). Community case management of fever due to malaria and pneumonia in children under five in Zambia: a cluster randomized controlled trial. *PLoS Med.*, 7(9), e1000340.
35. Seidenberg, D., Hamer, D. H., Iyer, H., *et al.* (2012). Impact of integrated community case management on health seeking behaviour in rural Zambia. *Am J Trop Med Hyg.*, 87(5 Suppl), 60-62.
36. Degefe, T., Marsh, D., Gebremariam, A., *et al.* (2009). Case management improves use of treatment for childhood diarrhea, malaria and pneumonia in a remote district in Ethiopia's Oromiya Region. *Ethiop J Hlth Dev.*, 23, 120-126.
37. Gyapong, M. & Garshong, B. (2007). *Lessons learned in home management of malaria: Implementation research in four African countries*. Geneva, World Health Organization.
38. Bennett, S., George, A., Rodriguez, *et al.* (2014). Policy challenges facing integrated community case management in sub-Saharan Africa. *Trop Med Int Hlth.*, 19(7), 872-882.
39. Lane, C. & Glassman, A. (2007). Bigger and better? Scaling up and innovation in health aid. *Hlth Affairs (Millwood)*, 26, 935-948.
40. Uzochukwu, B. S. C., Onwujekwe, E. O., Onoka, C. A. & Ughasoro, M. D. (2008). Rural-urban differences in maternal responses to childhood fever in south East Nigeria. *PLoS ONE.*, 3(3), e1788.
41. Ogunrinde, O. G., Raji, T., Owolabi, O. A. & Anigo, K. (2012). Knowledge, attitude & practice of home management of childhood diarrhoea among care-givers of under-five children with diarrhoeal diseases in North Western Nigeria. *J Trop Pediatr.*, 58(2), 143-146.
42. Okeke, T. A. (2009). Rural-urban differences in health-seeking for treatment of childhood malaria in south-east Nigeria. *Hlth Pol.*, 95(1), 62-68.
43. Uchendu, U. O., Emodi, I. J. & Ikefuna, A. N. (2011). Pre-hospital management of diarrhea among care-givers presenting at tertiary health institution: implications for practice and health education. *Afr Hlth Sci.*, 11(1), 41-47.
44. Hogan, B. E. & Adindu, A. (2013). Malaria in under-five children and help-seeking behaviour of mothers in Calabar, Nigeria. *Dev Country Studies*, 3(9).
45. FMOH (2012). *Roll back malaria partnership: progress and impact series*. Country reports. Federal Ministry of Health Nigeria.
46. Goodman, C., Brieger, W. & Unwin, A. (2007). Medicine sellers and malaria treatment in sub-Saharan Africa: what do they know and how can their practice be improved? *Am J Trop Med Hyg.*, 77(6 Suppl), 203-218.

47. Nguyen, D. T. K., Leung, K. K., McIntyre, L., Ghali, W. A. & Sauve, R. (2013). Does integrated management of childhood illness (IMCI) training improve the skills of health workers? A systematic review and meta-analysis. *PLoS One.*, 8(6), e66030.
48. Gouws, E., Bryce, J., Habicht, J. P., *et al.* (2004). Improving antimicrobial use among health workers in first level facilities: results from the multi-country evaluation of the IMCI strategy. *Bull WHO.*, 82(7), 509-515.
49. Tulloch, J. (1990). Integrated approach to child health in developing countries. *Lancet*, 354(2), 16-20.
50. Chopra, M., Sharkey, M., Dalmiya, M., Anthony, M. & Binkin, M. M. (2012). Strategies to improve health coverage and narrow the equity gap in child survival, health, and nutrition. *Lancet*, 380(9850), 1331-1340.
51. Callaghan-Koru, J. A., Hyder, A. A., George, A., *et al.* (2012). Health workers' and managers' perception of the integrated community case management program for childhood illness in Malawi. *Am J Trop Med Hyg.*, 87(5 Suppl), 61-68.
52. Kalyango, J. N., Lindstrand, A., Rutebemberwa, E., *et al.* (2012). Increased use of community medicine distributors and rational use of drugs in children less than five years of age in Uganda caused by integrated community case management of fever. *Am J Trop Med Hyg.*, 87(5 Suppl), 36-45.
53. Ebuehi, O. M. & Adebajo, S. (2010). Improving caregivers' home management of common child illness through community level interventions. *J Child Hlth Care.*, 124(3), 5237-5245.
54. Kelley, L. M. & Black, R. E. (2001). Research to Support Household and Community IMCI. Report of a meeting, 22-24 January 2001 Baltimore, Maryland, USA. *J Hlth Pop Nutr.*, 19(2), 111-154.
55. Sirima, S. B., Konate, A., Tiono, A. B., *et al.* (2003). Early treatment of childhood fevers with pre-packaged anti-malarial drugs in the home reduces severe malaria morbidity in Burkina Faso. *Trop Med Int Hlth.*, 8(2), 133-139.
56. Nyamongo, I. K. (2002). Health care switching behaviour of malaria patient in a Kenyan rural community. *Soc Sci Med.*, 54(3), 377-386.
57. USAID (2001). Reaching communities for child health and nutrition: a proposed implementation framework for HH/C IMCI. Baltimore Maryland.
58. Armstrong Schellenberg, J. R., Adam, T., Mshinda, H., *et al.* (2004). Effectiveness and cost of facility-based IMCI in Tanzania. *Lancet*, 364(9445), 1583-1594.
59. Mahmood, M. A., Khan, K. S., Kadir, M. M., Barney, N., Ali, S. & Tunio, R. (2002). Utility of participatory rural appraisal for health needs assessment and planning. *J Parkis Med Assoc.*, 52(7), 296-300.

60. MOH (2004). *Home-based management of fever strategy in Uganda: Assessment of implementation and operation at district and community levels*. Ministry of Health Uganda.
61. Fapohounda, B. M., Plowman, B. A., Azaiwe, R., *et al.* (2004). *Home-based management of fever strategy in Uganda: Report of the 2003 survey*. Arlington, VA: Ministry Of Health Uganda.
62. Ali, M., Emch, M., Tofail, F., Banqui, A. H., *et al.* (2001). Implications of health care provision on acute lower respiratory infection mortality in Bangladesh children. *Soc Sci Med.*, 52(2), 267-277.
63. Amarasiri de Silva, M., Wijekoon, A., Hornik, R. & Martines, J. (2011). Care-seeking in Sri Lanka: one possible explanation for low childhood mortality. *Soc Sci Med.*, 63, 1363-1372.
64. Espejo, L. & Tam, L. (2001). *Saving the lives of children with pneumonia by linking health facilities with community in rural areas of Peru*. Atlanta GA: CARE.
65. Sudhinaraset, M., Ingram, M., Lofthouse, H. K. & Montagu, D. (2013). What is the role of informal healthcare providers in developing countries? A systematic review. *PLoS One.*, 8(2), e54978.
66. Acton, G. J. (2002). Health-promoting self-care in family caregivers. *WJ of Nur Res.*, 24(1), 73-86.
67. Uzochukwu, B. S. C., Onwujekwe, O. E., Okwuosa, C. & Ibe, O. P. (2014). Patent medicine dealers and irrational use of medicine in children: The economic cost and implications for reducing childhood mortality in South Eastern Nigeria. *PLoS One.*, 9(3), e91667.
68. Cowan, S. (2006). Inequality in household decision-making for early treatment of malaria in young children: a case study in Northern Ghana. The Georgetown undergraduate. *J Hlth Sci.*, 4, 1.
69. Buchner, D. L., Brenner, J. L., Kabakyenga, J., *et al.* (2014). Stakeholders' perception of ICCM by community health workers: a post-intervention qualitative study. *PLoS One.* 9(6), e98610.
70. Butz, A. M. (2006). Evidence-based practice: what is the evidence for medication adherence in children? *J Paedtr Hlth Care.*, 20(5), 338-341.
71. Smith, B. A. & Shuchman, M. (2005). Problem of non-adherence in chronically ill adolescents: Strategies for assessment and interventions. *Curr Opin Pead.*, 17(5), 613-618.
72. Treleaven, E., Liu, J., Prach, L. M. & Isiguzo, C. (2015). Management of paediatric illnesses by patent and proprietary medicine vendors in Nigeria. *Mal J.*, 14, 232.
73. Berendes, S., Adeyemi, O., Oladele, E. A., Oresanya, O. B., Okoh, F. & Valadez, J. J. (2012). Are patent medicine vendors effective agents in malaria control? Using lot quality assurance sampling to assess quality of practice in Jigawa, Nigeria. *PLoS One.*, 7, e44775.

- 
74. Ndyomugenyi, R., Magnussen, P., Clark, S., *et al.* (2007). Diagnosis and treatment of malaria in peripheral health facilities in Uganda: findings from an area of low transmission in South West Uganda. *Mal J.*, 6, 39.
75. Onwujekwe, O., Ojukwu, J., Uzochukwu, B., Dike, N., Ikeme, A. & Shu, E. (2005). Where do people from different socio-economic groups receive diagnosis and treatments for in South Eastern Nigeria? *Ann Trop Parasitol.*, 99(5), 473-481.
76. Chukwuocha, U. M., Okpanma, A. C., Nwakwuo, G. C. & Dozie, I. N. S. (2014). Determinants of delay in seeking malaria treatment for children under-five years in parts of South Eastern Nigeria. *J Comm Hlth.*, 39(6), 1171-1178.
77. Amexo, M., Tolhurst, R., Burnish, G. & Bates, I. (2004). Malaria misdiagnosis: effects on the poor and vulnerable. *Lancet*, 364(9448), 1896-1898.
78. Ajibade, B. L. (2013). Mothers' action and preferences of treatment of febrile illnesses among under-five children in Osun State. *J Bio Agric Hlth care.*, 3(7), 148-155.
79. Ay, P., Hayran, O., Topuzglu, A., *et al.* (2009). The influence of gender roles in health seeking behaviour during pregnancy in Turkey. *The Euro J Contr Rep Hlth Care.*, 14(4), 290-300.
80. Synovitz, R. (2017). *Afghanistan: gender taboos keep Afghan women from seeking medical care.*
81. Regmi, K., Smart, R. & Kottler, J. (2010). Understanding gender and power dynamics within the family: a qualitative study of Nepali women's experience. *The Aus New Z J Fam Ther.*, 31(2), 191-201.