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The Tripartite Link between Knowledge Sharing of Birth Companions on Maternal Health, Indigenous Knowledge and Climate Change

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***Abstract*—Knowledge is considered as justified true belief. It is a condition of knowing fact or something through a combination of skills, experience and understanding values, relative information and expertise. Indigenous knowledge held by Birth Companions and expectant mothers enables them to share knowledge on maternal health care and climate change thereby learn to accommodate any changes likely to be realized during referrals. This paper discusses the tripartite link between knowledge sharing of birth companions on maternal health, indigenous knowledge and climate change. The study used mixed method approach based on a survey design. Data was collected from 782 sampled from a population of 5768 comprising of birth companions, community health volunteers, public health officers, district health officers, matrons and director health services using questionnaires, interview and observation checklists. Qualitative data was analysed using statistical software package (SPSS) to generate descriptive and inferential statistics while the qualitative data was analysed thematically. The study found out that Birth companions use indigenous knowledge to help in massaging expectant mothers and herbal medicinal care to ease the pains during labour. Indigenous knowledge was used to share with expectant mothers on preparation of birth plans and danger signs. The study recommends that birth companions need to be conversant with climate changes in their environments and should make use of the indigenous knowledge while residing in a place for a longer time.**

***Index Terms*—Birth companions, climate change, indigenous knowledge, maternal health.**

I. INTRODUCTION

Indigenous populations particularly in Africa have been identified as vulnerable to climate change. This hypothesis however, does not encompass the diverse geographies of how people experience, understand, and respond to climate-related health outcomes, and overlooks non climatic determinants such as indigenous knowledge held by birth companions and impacts of sharing it[I]. .Many indigenous populations face unique exposures and sensitivities to climate change, a function of close relationships with and dependence on land, sea, and natural resources; livelihoods; culture; and habitation in regions that are undergoing rapid climatic and socioeconomic change. Sensitivity to climate-related health outcomes is also determined by the organization and structure of health systems, current burden of ill health, and material conditions and behavioural factors; that is, the social determinants of health.

These factors create risk profiles that differ significantly from non-indigenous populations, and also among and between indigenous groups [I].

Findings of studies focussed on profiling the potential health implications and significant vulnerabilities of indigenous people/knowledge on climate change are yet to be documented. Presently accounted for key risks of climate change in health sector include increasing exposure to infectious diseases, exacerbated water and food insecurity, natural disasters and population displacement [2]. Studies also projects that populations will be differentially vulnerable to these potential impacts at global to local levels [I]. Those at highest risk consist of populations with an existing high burden of ill health, who are sensitive to climate-related health risks, and live in nations with limited technological capacity, weak institutions, high levels of poverty, and political inequality

[I]. This list also has indigenous populations which have been identified as a highly vulnerable group within global discourse on climate change because of habitation in regions undergoing rapid change, and the disproportionate burden of morbidity and mortality faced by many groups. Yet our understanding of the human dimensions of climate change for indigenous us populations at a global level is limited [3]]for instance, noted how indigenous-focused content has been largely overlooked in assessment reports of the Intergovernmental Panel on Climate Change (IPCC), other major assessments [4] and in policy discussions surrounding the United Nations Framework Convention on Climate Change (U.N.F.C.C.C). Where indigenous issues are captured, indigenous ways of understanding and information about climate-society interactions embedded in myths, stories, tradition, and observations have typically been marginalized.[5] and [6] described as the civic epistemology of global climate change discourse that prioritizes positivist disciplines at the expense of the interpretative, creating knowledge detached from its local context. As a consequence, indigenous peoples are often viewed as powerless victims of climate change, overlooking how social, cultural, and economic conditions determine how climate change is experienced, understood, and responded to, and downplaying the accumulated

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knowledge and wisdom embodied in traditional knowledge systems that can provide valuable lessons for adaptation. In this way, climate change is constructed as a problem for society as opposed to a problem of society, directing attention away from the underlying root causes of vulnerability.

In contrast to the global framing of climate change discourse for indigenous populations, there is an increasingly rich and diverse body of scholarship examining vulnerability and adaptation to climate change at a local to regional level, with a number of studies focusing on health. Such case study research typically focuses on particular places, peoples, and cultures, but this work focussed on knowledge sharing among BC.

A. Objective

This paper was to establish whether climate change and indigenous knowledge was shared in maternal health systems by birth companions in Kenya particular in Kakamega County.

II. LITERATURE REVIEW

Previous studies show thatglobally, maternal mortality rates remain abnormally high 488/100000live births. Mothers need to share knowledge on how to remain aware of their reproductive health during pregnancy, childbirth and postpartum [7]. [8] expects all countries in the world to reduce their maternal mortality rates to two thirds in line with the 2010 baseline level. This includes maternal mortality rate of less than 70/1000000live births in 2030 where no country in the world will have a maternal mortality rate greater than 140/1000000 live births.

In Mexico maternal mortality rates is are 33/1000000 live birth where birth companions play a major role in sharing knowledge with mothers during delivery in rural communities to about 45% of the deliveries achieved.

In Brazil, Guatemala and Indonesia, birth companions are able to identify early significant signs of any complication that may arise during labour [9]. Knowledge sharing among expectant mothers can help prevent loss of lives that may occur due to ignorance. Wellbeing of a mother and their unborn child is very important and should never be compromised.

In Latin America, [1] point out that there are inequalities in access to health care and in June 2017 the country signed “promise Renewed” pledge to reaffirm its promise on maintaining a child health care in order to end preventable child deaths.

Sensitization on awareness on knowledge on information regarding guidelines on WHO recommendations that there should be continuous companionship that should be taken care of during labour as well as childbirth. Knowledge sharing awareness on these guidelines can help optimize the roles of health workers in improving access to maternal and newborn interventions on health. Indigenous knowledge held by BCs can help in preserving the cultural integrity of many communities which in turn can help influence improvement on maternal health care, when different communities interact with other communities and share knowledge on climate change. Indigenous people have a lot of experience on how to protect and restore natural resources, history and their future.

In Sierra Leone the MMR is at 1360/100000 live births and BCs are of great help to expectant mothers where they ensure that knowledge sharing on safe deliveries and quality care to the new-born babies is enhanced [1]. This study considers some of the practices of the birth companions to be of use, to apprenticeship in ensuring that delivery for all mothers is safe. Just like Kenya, BCs are encouraged to refer mothers to a health facility; however, the available BCs in Sierra Leone are paid Kola nuts gifts of rum and kola nuts. However, maternal health care knowledge on utilization of ANC and PNC can help improve maternal mortality rates in the country. Causes of maternal deaths in some of the districts in Ethiopia can be averted through knowledge sharing when there is recognition of danger signs of these complications and access to health facilities and use of skilled institutional care [1]. Birth companions are treated with respect as they are encouraged to share knowledge on complications with maternal mothers in preventing MMR.

[1] revealed that BCs are able to help mothers since they understand their beliefs and cultures and can assist them when need arises through knowledge sharing. [14] affirmed that challenges related to culture may be the most important factors for successful penetration of positive health seeking behaviour practices can be enhanced through knowledge sharing among BCs. [15] agree that improvement in maternal health outcomes is more likely if the agents of communication and advocacy are community-owned persons such as informed BCs. Countries that embrace knowledge sharing on maternal health can always achieve their goal by ensuring that medical practitioners are well enumerated and motivated in order to maintain a health service environment that may be all inclusive. A study by [16] points out that in Nigeria, despite the dangers many women still shun skilled medical services during child birth. The maternal mortality rates in Nigeria is at 872/1000000 live birth. Indigenous knowledge held by BCs can help mitigate the high maternal mortality rates through sharing with other BCs and expectant mothers.

A report by [17] discloses that worldwide, every year 303,000 women die while giving birth, however, almost 2.7 million new born die while in their 28 days of life while another 2.6 million new-born are stillborn. Indigenous knowledge held by birth companions on Anti-natal care and postnatal care can help reduce maternal mortality rates. Anti natal care visits before birth promotes monitoring of the safety of the mother and unborn child. During this visits, indigenous knowledge known on nutritional values and traditional knowledge on caring of an infant using herbal medicine is shared by BCs to expectant mothers.

In Kenya [18[noted that the relevance of knowledge sharing on maternal health remains a concern by health

practitioners. The role of BCs in knowledge sharing enhances safe deliveries and therefore needs to be investigated to establish whether this knowledge can be exchanged or documented for future reference. Knowledge sharing by BCs can help reduce MMR. [19] report confirms that out of the 47 counties in Kenya, Kakamega is ranked 5th among the 15 leading counties with high maternal deaths after Nakuru and followed by Kilifi. Kenya Vision 2030 maternal deaths remain a major challenge despite the many efforts that are being made, the number of deaths for every 100,000 live births largely remains unchanged between 1988 - 2008. The government's target of reducing maternal mortality rate (MMR) from 410 to 147 per 100,000 live births has not been met. Instead, it has increased to 488. The use of skilled attendants at delivery stands at 46%. Knowledge sharing among BCs enables mothers to exchange knowledge and share it with others on safe deliveries, given that when a mother dies during childbirth, her infant has only 19% chances of surviving their first month [20]. [21] observed that in 2013, Kenya had 488 maternal deaths against one of the highest maternal mortality rates in the world, and by 2022 the maternal deaths are at 362 per every 100,000 births that are alive, as recorded by the Ministry of Health; with common causes of maternal death in being hypertension and haemorrhage. However, prenatal care and giving birth in an equipped medical facility is key to reversing that trend as Kenya's government has made prenatal care and childbirth free in public hospitals nationwide. Knowledge sharing among BCs can help eliminate complications that can arise during delivery by identification of early signs of danger. [22] and [23] pointed out that in Kakamega County; maternal deaths have increased since mothers do not deliver in hospitals. Mothers are encouraged to access health facilities in the sub counties.

[15] observe that improvement in maternal health in Kenya has been inconsistent over the past two decades. Maternal deaths can be avoided if deliveries are supervised by persons with skills during labour.[24] reports that a significant number of births presided over by health personnel are still as low as 50% although it currently lies at 46%. [25] observed that knowledge sharing among BCs on labour can help assist mothers make early preparations during delivery and can also be leveraged for posterity. This study sought to examine knowledge sharing attitudes and practices among BCs on maternal health.

[26] states that activities of BCs were discouraged by the Kenyan Government for several years; women were encouraged to seek delivery in health facilities with the assistance of skilled birth attendants, with the Government's implementation of a community midwifery program in 2005, although up-scaling was hampered by a number of factors which include poor funding among others. Whereas the overall proportion of births attended by skilled health professionals has risen from 44 to 62 %, with a concomitant increase in the proportion of deliveries that occur in a health facility (43 to 62 %), the regional rate of health facility-based deliveries assisted by a skilled birth attendant in former Western Province, (Bungoma, Busia Kakamega) in national average is around 47 % [27].

Knowledge sharing therefore is the fundamental means through which BCs can contribute to the knowledge application and innovation by ensuring that BCs adhere to the WHO recommendations when accompanying an expectant mother. [16] affirmed that knowledge sharing recognition as being central to working and increasingly important within communities of practice where there can be exchange and networking. The goal is to save lives by ensuring that mothers deliver their new-borns in hospitals. However, some women say, they aren't quite happy with the care services available as they are returning to birth companions. A birth companion is a person who acquired knowledge though apprenticeship and observation from their parents, grandparents, great grandparents or relatives.

At county levels, mothers have little information on the health facilities that are available in their regions which may help them during delivery [28]. The choice of being assisted by a BC can only be avoided if they have prior knowledge that can alleviate challenges that they are likely to encounter during complications. Indigenous knowledge among BCs can be shared to promote maternal health care services in the health facilities [29]. This knowledge can be shared on BCs practices to have an effect on the quality of care given to mothers during and after delivery processes.

III. METHODOLOGY

Mixed methods as the approach which draws multiple research perspectives and positions by collecting, mixing, analysing and interpreting both qualitative and quantitative data.The study adopted a mixed method approach using qualitative and quantitative strategies based on survey design. According to [34] the method draws multiple perspectives and positions by collecting, mixing, analyzing and interpreting qualitative and quantitative data. Mixed methods in research entails the integration or mixing of qualitative and quantitative components at multiple levels [35]. The contextual set up of the study was Kakamega County in Kenya which currently has a population of 1,660,651 million and an area of 3,034km. The County has 282 health facilities which formed the premise of this study. Kakamega county was chosen for this study because it reports high death rates on maternal health [27]. The study population was 5768 comprising of 500 BCs; 78, key informants and 190 Community health volunteers and 5000 mothers who had sought services of BCs in this County. Non-probability, purposive sampling technique was used to select BCs, mothers, key informants and community health volunteers since they were knowledgeable and very informed on the subject under investigation. Snowball sampling was employed to select subjects where the first identified study subject (mother who had sought services of BCs) named others that they knew had also sought services, provided or knew services of BCs until the required sample number was attained that yielded a sample size of 782.

IV. RESULTS OF THE FINDINGS

The results indicated that the majority of the respondents 160(36.2%) had tacit knowledge, while 106(24.0%) had indigenous knowledge which was the most dominant type of knowledge that the respondents knew without any explanation. Additionally, 81(18.3%) of the respondents had explicit knowledge, while another 60(13.6%) were aware of implicit knowledge, and 28 (6.3%) of them were not sure of any knowledge they possessed, as compared to a few 7(1.6%) pointed out that they did not know any type of knowledge. The findings of this study revealed that tacit knowledge was shared through barazas. Possession of any type of knowledge is very important as it enhances networking, exchange and sharing of information on maternal health care. The results established that BCs were sufficiently conversant with explicit, indigenous as well as tacit knowledge which they used to share with expectant mothers on preparation of birth plans and danger signs. Findings of this study revealed that explicit knowledge under the custody of BCs was easy to articulate, write down and share while the indigenous knowledge was acquired when one resided in a place for a long time. Respondents of this study alluded to a common fact that the indigenous knowledge was that knowledge that remains a community's heritage rather than private property. These findings resonate with findings of [30] on the study on knowledge sharing which found out that indigenous knowledge is attributed to people that have lived in the same community for a period of time as well as generations in a similar environment. On the tacit type of knowledge, this study established that tacit knowledge gained from personal experience was more difficult to express and also least used by BCs and yet it was the knowledge that resided in a human mind which relied on the expertise and experience of an individual. Similar findings by [31] and [32]explain that tacit knowledge is difficult and hard to acquire and transfer since it relies on knowing what one knows and requires face to face mechanism and its capability to explore mechanisms which can either result in a success story or one hard experience.

The findings show that knowledge shared by BCs was largely through explicit competencies resulting into knowledge that was easy to share, articulate, and even write down. This influenced a great deal in ensuring that mothers were well informed on the importance of acquiring quality maternal heath care facilities. A well informed person can be able to make well guided informed decisions. The other dominant type was indigenous knowledge that respondents could articulate easily without making reference to any sources largely because they had lived in the same community for a long time and were conversant with it and could use it without much explanation. Tacit knowledge which is known to reside in the mind of a human being was also preferred where BCs cultural competency also known as apprenticeship was passed from one generation to another over a period of time. BCs possessed psychosocial knowledge which they acquired through observation and imitation was also another knowledge acquisition process which enabled birth companions to assist expectant mothers and facilitate referrals where need was inevitable. These study findings agree with those of [29] who concluded that indigenous knowledge can help influence access and dissemination of information among different cultural communities

This study revealed that BCs are well-acquainted with knowledge on matters such as signs of different stages of pregnancy and their potential risks as well as their remedies, delivery process, nutritional requirements for expectant mothers, type of exercises to be done by expectant mothers and their importance, the best baby nursing practices as well as hygiene status for both the mother and the baby, sexually transmitted diseases and their remedies and also the traditional way of family planning. For instance, in this study some respondents stated that mothers encounter painful deliveries and that prompted intervention of a skilled medical practitioner. The use of gestures by mothers as signs indicated the pain they were undergoing. This finding resonates with [33] line of argument that states that explicit knowledge is usually expressed formally using a system of symbols, and can therefore be easily communicated or diffused. The birth companions were able to predict the due dates when the mothers were nearing delivery and ability to accompany them to the nearest hospitals or health centres. The findings of this study indicate that BCs have knowledge on safe deliveries and interpretation of the information on quality health care. It was evident that most BCs in this study recited the knowledge they have without making reference to any archive resource like books or any artefact, notwithstanding the noticeable inconsistencies registered in their responses. This observation supports Boisot's theory which assumes that knowledge can either be documented or undocumented and is modelled through sharing on the types of knowledge acquisition cross groups of people, on a need to know basis.

The study established that in scenarios where this knowledge was amply utilized for the benefit of expectant or lactating mothers, a significant positive impact was registered. For instance, use of the previously mentioned communication platforms to share the fore-mentioned knowledge have had a positive effect in increasing awareness on maternal health in the county. A significant number of BCs alluded to the fact that in cases where their expertise was not working they had swiftly referred their customers to seek further medical examination and management from hospital hence positively influencing access to health facilities. Furthermore, BCs who shared knowledge on quality health care with their clients positively contributed to reduction of maternal mortality rates in the county. As a result of sharing the vast knowledge with some members of the community, they increased the size of their clientele, majority of whom expanded their operational niche through referrals (networking). The study also noted that knowledge under the custody of BCs had been preserved and passed onto generations through apprenticeship of members within the same family.

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Table 1: Types of Knowledge Shared by BCs

Types of Knowledge	Frequency	Percentage
Tacit (Knowledge gained from personal experience that is more difficult to express)	160	36.2
Indigenous (Knowledge attained when one resides in a place for a long time)	106	24.0
Tacit (Knowledge that is easy to articulate, write down and share)	81	18.3
Implicit (The application of explicit knowledge)	60	13.6
Not sure	28	6.3
None of the above	7	1.6
Total	**442**	**100.0**

A.Types of Knowledge Shared by BCs on Maternal Health

The study sought to identify different types of knowledge shared by BC on maternal health. The respondents were asked if they knew of any knowledge that BCs shared on expectant mothers during and after delivery as shown in Table 2. Arising from analysis in table 2 the study established that majority 18(26.9) of the respondents stated that BCs possess knowledge on conducting deliveries, while 15(22.4%) said that tacit, implicit and explicit knowledge. Another 8(11.9%) said that BCs knowledge of practicing ante-natal care and post-natal care. A few 6(9.0%) pointed out that BCs possessed indigenous knowledge on the practices they offer. Table II demonstrates that majority of the respondents had knowledge on care of an infant during delivery. The practices included easy identification of the position of the unborn baby. When the BCs massage mothers with the milking oil then they are able to help detect the position of the unborn baby and advice the mother on the necessary action to be taken [36]. This finding agrees with those of [37] that BC rely on the utilization of available knowledge concerning expectant mothers so that they can assist them effectively while making referrals and also in deliveries in case labour occurs earlier than the due date of an expectant mother.

Table II: Type of Knowledge shared by BCs on Maternal Health Care

Type of knowledge	Frequency	Percentage
Conducting deliveries	18	26.9
Tacit, implicit, explicit knowledge	15	22.4
Ante-natal care and post-natal care	8	11.9
Indigenous knowledge	6	9.0
Massaging mothers	4	6.0
Encouraging mothers to deliver in hospitals	3	4.5
Placenta retention	2	3.0
Family planning	2	3.0
Prevention of STDs	2	3.0
Support mothers during labor	2	3.0
Life of the baby	1	1.5
Haemorrhage	1	1.5
Previously BC's worked as midwives	1	1.5
Health education	1	1.5
None	1	1.5
Total	67	**100.0**

V. CONCLUSION

Policy recommendations on approaches to improve service offered by B.Cs through enhanced knowledge sharing platform on climate change

Improvements of maternal and child health outcomes ultimately depend on the integration of evidence and operationalization of policies into effective practice.

Maternal health knowledge and information dissemination platforms among birth companions including other media interventions in maternal and child health are critical facets of healthcare provision by both national and county governments in Kenya.

Trainings based on enhancing indigenous knowledge can help contribute to the driving force for vision 2030 that directly contributes to the Sustainable Development Goals no. 3.

VI. RECOMMENDATIONS

Formulation and adoption of training policies on indigenous knowledge that promotes maternal health care information services.

Government of Kenya should help to develop training policies that advance the promise of knowledge sharing by BCs as a vehicle for population-level behaviour change which builds upon a framework that positions maternal healthcare interventions.

Health programs should adopt an overarching strategy that integrates BCs knowledge database, knowledge sharing platforms, and other media into community and health system interventions. This is due to the fact that existing maternal healthcare interventions are driven by commercial interests, disease-specific programs, and uncoordinated donor and research projects.

There is need to fast-track indigenous knowledge on maternal healthcare trainings that encourage network deployment, ensure interoperability of various platforms.

Investments in maternal healthcare intervention should include a focus on the most vulnerable and marginalized populations in Kenya.

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