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Implementation of Kangaroo mother care by health workers in Nigeria

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Abstract*:* *Background:* Kangaroo Mother Care (KMC) has been proven to significantly improve growth, reduce mortality and morbidity in low birth weight infants. The impact of KMC in newborn care is expected to be greatest in Africa due to limitations in health care.
Objective: The aim of this study was to determine the proportion of Nigerian health workers rendering paediatric care who practice KMC in their institution, and identify some challenges affecting the practice of KMC in Nigerian health institutions.
Method: A cross sectional study of the participants at 45th annual scientific conference of the Paediatric Association of Nigeria was conducted.
Result: A total of157 respondents 122(77.7%) doctors and 35 (22.3%) nurses were studied. 84 (53.5%) practiced KMC. The reasons for not practicing KMC were lack of policy reported by 43 (58.9%) and inadequate place for the mothers to stay 30(41%).The level of practice was significantly higher among respondents that worked in facilities that care for sick neonates ($p = 0.049$), have functional incubators ($p = 0.014$) and practice KMC ($p < 0.001$).
Conclusion: Hospitals should have a written KMC policy and provide KMC wards in order to improve implementation of KMC practice in Nigeria.

Keywords: Health workers, kangaroo mother care, low birth weight, neonate, Nigeria

Introduction

Kangaroo Mother Care (KMC) is the early, prolonged and continuous skin – to – skin contact between the mother (or substitute) and her low birth weight infant, both in hospital and after early discharge, until at least the 40th week of postnatal gestation age.[1] The development of this method of care in early 1970s, was motivated by problems arising from shortage of incubators, overcrowding and the impact of mother and newborn separation in hospitals caring for low birth weight infants.[1]

KMC has been proven to significantly improve growth, reduce mortality and morbidity particularly from hypothermia, hypoglycemia and nosocomial sepsis in neonates with birth weight of <2000g.[2,3] Lawn et al, in a meta-analysis of three randomized control trial studies reported that KMC decreased mortality in neonates with birth weight of <2000 g by 51%.[4] More than three decades after its development, KMC is now recognized by global experts as an integral part of essential newborn care.
It is expected that the impact of KMC in newborn care would be greatest in Africa with a significant number of low income countries. This is because of limited options for care for preterm babies with few neonatal care units, located often in distant referral hospitals which are understaffed and ill-equipped. The implementation of KMC on an appreciable scale in the relatively few health facilities in low income countries is the only way this strategy can make significant impact in reducing the unacceptably high neonatal mortality in these low income countries.

In Nigeria, it was estimated that KMC would save over 19,000 lives by 2015 if all preterm neonates were to be reached.[5] For this to succeed, the health worker that renders pediatric care would have to start implementing KMC in the health facility where they practice and then aim to scale it up to involve the grass roots. According to reports by Victora et al, one of the reasons attributed to poor expansion of KMC practice on a large scale in most low- and middle-income countries is because in these countries, KMC implementation started at a teaching or other tertiary hospital without expanding to district hospitals.[6] Within the health facility, Provision of a private comfortable environment and having written protocols has also been identified as one of the supporting factors that promote KMC practice.[6,7] In Nigeria KMC was first introduced in the late 1990s through a resident pediatrician at the University of Lagos Teaching Hospital following a month-long training in Bogotá, Colombia.[8] KMC was also declared as the best option of

practice in 1998 during the 29th annual general and scientific conference of the paediatric association of Nigeria.[9] More than 2 decades after the adoption of KMC in Nigeria, with various training programs organized by ministry of health and Non-governmental organizations at different levels of heath care from tertiary to primary, there has not been a study done to assess the level of adoption of this practice in health institutions in Nigeria. We set out to determine the proportion of Nigerian health workers at a paediatric conference rendering paediatric care who practice KMC in their institution, and identify some challenges affecting the practice of KMC in Nigerian health institutions.

Methods

A cross sectional study of the participants at 45th annual scientific conference of the Paediatric Association of Nigeria held in Calabar, Nigeria in January 2014 was conducted. The annual scientific meeting of the Pediatric Association of Nigeria is a forum that is usually attended by health workers who are involved or have interest in the care of children. Attendees are usually made up of doctors and nurses at different levels of their profession practicing in and outside Nigeria. The forum is a place for rubbing of minds, sharing of experiences and solutions to problems confronting both child health specialists and the Nigerian Child.

Nigeria is a country with 36 states divided into six geopolitical zones [North Central (Benue, FCT, Kogi, Kwara, Nasarawa, Niger and Plateau); North East (Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe); North West (Kaduna, Katsina, Kano, Kebbi, Sokoto and Jigawa); South East (Abia, Anambra, Ebonyi, Enugu and Imo); South South (Akwa Ibom, Bayelsa, Cross-River, Delta, Edo and Rivers); and South West (Ekiti, Lagos, Osun, Ondo, Ogun and Oyo]. This was used to categorize the location of the health facilities where the participants practiced.

Ethical clearance was obtained from the local organizing committee of the conference. Verbal consent was obtained from the attendees and questionnaires were given to those that gave consent. The filled out questionnaires were continually retrieved throughout the three days duration of the conference. Information collected from respondents included health facility information [name, location, type of practice, level of care rendered, availability of neonatal care, transport incubators and adequacy of incubators, and routine practice of KMC] and Health worker information [age, gender, occupation, level of qualification, area of specialty, years of practice, personal practice experience in educating parents or actual practice]. Questions on various levels of personal practice of KMC by the respondents including prescribing, teaching and giving information to parents, supervising and assisting in provision of KMC to neonates were asked in the questionnaire. Each positive answer was scored one point and the total scores were added up. Respondents scoring less than 50% were considered to have poor practice, those scoring 50 – 75% moderate, and those scoring above 75% as having good practice of KMC.

Data collected was entered and analyzed using EPI INFO version 7. Chi- squared test and Fishers Exact test were used to test for significant associations between proportions. Comparison of means was done with the student's t test. A p value of 0.05 or less was considered statistically significant.

Results

There were 157 respondents recruited in the study that completed and returned questionnaires out of 223 questionnaires distributed giving a response rate of 70.4%. Of this, 62 (39.5%) were males and 95 (60.5%) were females giving a male to female ratio of 1: 1.5. Table 1 shows the age group and gender distribution of the respondents.

Table 1: Age group and gender distribution of respondents

Age group (years)	Gender		
	Male N (%)	Female N (%)	Total N (%)
<20	0 (0.0)	1 (100.0)	1 (0.6)
20 – 30	2 (20.0)	8 (80.0)	10 (6.4)
31 – 40	39 (50.6)	38 (49.4)	77 (49.0)
41 – 50	15 (31.2)	33 (68.8)	48 (30.6)
51 – 60	5 (31.2)	11 (68.8)	16 (10.2)
>60	1 (20.0)	4 (80.0)	5 (3.2)
Total	62 (39.5)	95 (60.5)	157 (100.0)

The respondents consisted of health practitioners practicing in 26 out of the 36 states in Nigeria. Respondents from the South – South geo – political zone were the most, represented48 (30.6%) while those from the North east had the least number of respondents 5 (3.2%) (Figure 1).

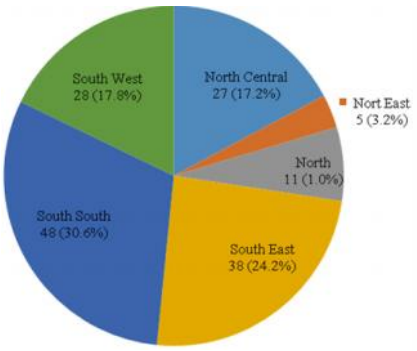


Fig 1: Distribution of respondent's health facilities by geo – political zones of Nigeria

Of the 157 respondents, there were 122 (77.7%) doctors and 35 (22.3%) nurses. A total of 138 (87.9%) respondents worked in tertiary institutions and only one respondent worked in a primary health care center. Majority of the respondents 97.3% had been practicing as health care providers for more than 5 years (Table 2).

Table 2: Qualification, care level and years of practice of Respondents

	Frequency (N)	Percent (%)
Qualification		
Consultant	59	37.6
Senior Registrar	36	22.9
Registrar	24	15.3
Medical Officer	3	1.9
Nurse	35	22.3
Care level of health facility		
Primary	1	0.6
Secondary	18	11.5
Tertiary	138	87.9
Years of practice		
<5	9	5.7
5-10	46	29.3
11-15	46	29.3
16 - 20	17	10.8
>20	39	24.9

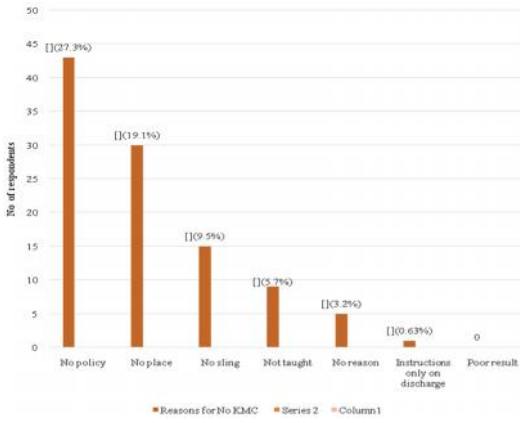
One hundred and four (98.1%) respondents worked in facilities that care for sick neonates and the facilities of 84 (53.5%) of the respondents practiced Kangaroo Mother Care (Table 3).

Table 3: Some neonatal care practices of facilities where respondents practice

Neonatal care practices of facility	Yes N(%)	No N (%)
Care of sick newborns	154 (98.1)	3 (1.9)
Availability of incubators	85 (54.1)	72 (45.9)
Availability of transport incubators	53 (33.8)	104 (66.2)
Practice of Kangaroo Mother Care	84 (53.5)	73 (46.5)

Of the 73 respondents that did not practice KMC in their facilities, the most common reason reported by 43 (58.9%) was a lack of policy on the practice of KMC. No respondent reported poor Result as a reason for not practicing KMC (Figure 2).

Fig 2: Reasons for not practicing Kangaroo Mother Care in facilities of respondents



KMC was practiced most among health care facilities in the North West geopolitical zone (81.8%) and not at all among represented facilities from the North East zone (Table 4).

Table 4: Distribution of health workers that practice KMC by geo – political zones

Geo – political zone	Hospital Kangaroo Mother Care practice			
	Yes N (%)	No N (%)	Total N	P
North Central	10 (37.0)	17 (63.0)	27	0.05
North East	0 (0.0)	5 (100.0)	5	0.02
North West	9 (81.8)	2 (18.2)	11	0.05
South East	21 (55.3)	17 (44.7)	38	0.80
South South	28 (58.3)	20 (41.7)	48	0.42
South West	16 (57.1)	12 (42.9)	28	0.67
Total	84 (53.5)	73 (46.5)	157	

As shown in Table 5, the level of practice of KMC among respondents was significantly higher among respondents that worked in facilities that care for sick neonates ($p = 0.049$), those that worked in facilities with functional incubators ($p = 0.014$) and those that worked in facilities that practice KMC ($p < 0.001$). The level of practice was also higher among females, nurses and respondents that practiced in the Southern part of the Country but the observed differences were not statistically significant. The level of practice tended to improve with increasing years of practice except among those that had practiced for 11 – 15 years where a slight decline was noted. It also tended to improve with increasing care level of facility from Primary to Tertiary.

Table 5: Relationship between level of practice of KMC and some variables

Variable		Level of practice of KMC: Good	Moderate / Poor	Total	P
Gender	Male	34 (54.8)	28 (45 2)	62 (39.5)	0.084
	Female	65 (68.4)	30 (31.6)	95 (60.5)	
Occupation	Doctor	72 (59.0)	50 (41.0)	122 (77.7)	0.050
	Nurse	27 (77.1)	8 (22.9)	35 (22.3)	
Specialty	Paediatrician	70 (58.8)	49 (41.2)	119 (75.8)	0.052
	Non - paediatrician	29 (76.3)	9 (23.7)	38 (24.2)	
Subspecialty	Neonatologist	16 (61.5)	10 (38.5)	26 (16.6)	0.860
	Non - neonatologist	83 (63.4)	48 (36.6)	131 (83.4)	
Location of health facility	North	26 (60.5)	17 (39.5)	43 (27.4)	0.679
	South	73 (64.0)	41 (36.0)	114 (72.6)	
Care level of health facility	Primary	0 (0.0)	1 (100.0)	1 (0.6)	0.603
	Secondary	11 (61.1)	7 (38.9)	18 (11.5)	
	Tertiary	88 (63.8)	50 (36.2)	138 (87.9)	
Care for sick neonates	Yes	99 (64.3)	55 (35.7)	154 (98.1)	0.049*
	No	0 (0.0)	3 (100.0)	3 (1.9)	
Availability of incubators	Yes	61 (71.8)	24 (28.2)	85 (54.1)	0.014*
	No	38 (52.8)	34 (47.2)	72 (45.9)	
Practice of KMC in facility	Yes	70 (83.3)	14 (16.7)	84 (53.5)	<0.001 *
	No	29 (39.7)	44 (60.3)	73 (46.5)	
Years of practice	<5	4 (44.4)	5 (55.6)	9 (5.7)	
	5 - 10	30 (65.2)	16 (34.8)	46 (29.3)	0.605
	11 - 15	28 (60.9)	18 (39.1)	46 (29.3)	
	16 - 20	12 (70.6)	5 (29.4)	17 (10.8)	
	>20	25 (64.1)	14 (35.9)	39 (24.8)	

Discussion

Health workers from the South South (SS) geopolitical region were the most represented in our sample population while the North East (NE) was the least represented. The location of the conference in which the study was carried was in the SS region so this could account for its high representation. The NE however has been reported to have the lowest number of pediatricians in Nigeria with >600,000 children per pediatrician ratio.[10] There has also been incidences of terror attacks in the past one year in the NE region leading to displacements of people inclusive of health workers. Most (87.9%) of the health workers in our study population were in tertiary centers, it is not surprising as Ekure et al had earlier reported that 87.5% of pediatricians in Nigeria were in the tertiary institutions.[10] This brings to light, the essential need for pediatricians practicing in theses tertiary centers to identify and adopt the secondary and primary health centers within their locality in order to influence and impact positively on their practice. The pediatricians ought to work in the consciousness of the fact that, their responsibility is not confined to the four walls of the tertiary health facility in which they work but that it extends down to the grass root. This can be called "The triangular care" with the pediatrician in the tertiary facility at the top of this triangle.

In our study 45.9% of the respondents did not have incubators in their health facility and 66.2% did not have transport incubators. The needs that contributed to high neonatal mortality which inspired the introduction of KMC in the early seventies is still with us, especially in low income countries and these include inadequate incubators, overcrowding and the impact of mother and newborn separation in hospitals caring for low birth weight infants.[1] Added to the afore mentioned, is the unavailability of transport incubators to transport preterm infants born in peripheral centers to bigger hospitals where neonatal care is available. All these highlights the need to train primary health workers at the grass root on KMC as this may be their only transportation practice option for the low birth weight infant.

From our study only 53.5% of the health workers practiced KMC, considering that these health workers are mostly from tertiary institutions and each tertiary institution is a referral center for other secondary and primary facilities within their regions. This apparently translates to a large population of low birth weight infants being nursed without the benefits of KMC. Victora et al stressed the importance of achieving equity in KMC delivery as groups that are left behind are often those with the highest burden of morbidity and mortality.[6]This can be said of the need for KMC which is high in the grass root and primary health care centers where most of the deliveries take place in low income countries. Studies have shown better weight gain among low birth weight infants discharged home on KMC than those in conventional care.[2,11] Follow up after discharge for LBW babies should be done in the health facility nearest to the infant which is usually a primary health care center. If KMC knowledge is impacted to these primary care centers then they can efficiently follow up the preterm infants and give support to mothers who continue KMC at home. Another reason the practice needs to be scaled up to the peripheral centers is the absence of transport incubators seen in 66.2% of the health centers that respondents come from which is made up of mostly tertiary centers. With the poor social amenities that are obtainable in low income countries, ambulance services are almost non-existent and as such KMC is the safest, practical way to transport a low birth weight infant born in a remote or peripheral health center that needs to be transferred to a tertiary center for specialized neonatal care.

The most common reason reported for not implementing KMC was not having a written protocol. Absence of clear guidelines on KMC is a barrier to its implementation[12,13] Written protocols help institutions standardize their practice, it enables the members of staff to be consistent at following procedures to achieve set goals with minimal errors. In the practice of KMC, having written protocols would help standardize the decision of who qualifies for the care, where it should be carried out and discharge procedure. Another factor affecting KMC practice in our study is not having a suitable environment. For places where KMC has been successfully practiced they had a dedicated KMC ward with beds for the mothers[3,14] Most health facilities in low income countries barely have enough space for baby cots and incubators and cannot provide a ward for stable mothers to stay and practice KMC. Besides that, there is the problem of transferred cost of such KMC ward occupancy on the family who already has the financial burden of a long stay preterm infant. If KMC wards are to be provided, the problem of who to finance its maintenance would have to be addressed, at no added cost to the mothers practicing KMC within the hospital. In this era of public-private partnership in Nigeria health industry, KMC wards can be subsidized and charged at biweekly and monthly rates. Mothers that need to stay longer in KMC wards could also be given higher discounts. This would, ease the financial burden on the parents and also benefit the hospital, with improved infant survival and patronage.

Lack of training contributed as a reason for not implementing KMC in only 9 (12.3%) of those not practicing KMC. This supports reports which states that in most low income countries training was done for most health workers in tertiary institutions where most of our respondents worked thus, accounting for the high number of respondents that had been trained in KMC.[6,14] It is remarkable to note that no health worker reported that they did not get any beneficial result from practicing KMC. This could be because at this point, more than four decades after development of KMC, the benefits of the practice is not in doubt among health workers. The problem really is, implementation bottlenecks of a practice we are convinced is beneficial to children that need it. Another reason given for non-implementation of KMC was lack of KMC support pouch. This is unfortu-

nate as any soft piece of fabric, about a meter square, can be used to support the baby on the mother's chest for KMC.[15] Although, only 1% of health workers practiced KMC only on discharge, it is important to address the fact that this practice is not beneficial to the baby and the institution as both parties would be short changed from benefiting from the advantages of KMC early in the care of low birth weight infants. Commencing KMC only during discharge would also lead to poor compliance rate on the part of the mother as they would not have had enough experience with KMC before being discharged to continue at home.

The health workers from NW had the highest practice of KMC. The reason for this may be due to the impact of the training program embark upon by Partnership for Reviving Routine Immunization in Northern Nigeria; Maternal Newborn and Child Health Initiative, in which over 260 health workers from 3 target states (2 in NW: Katsina, Zamfara and 1 in NE :Yobe) were trained in KMC with the mandate to implement and step down to their individual states.[8] The NW seemed to have made significant progress far exceeding the country's average KMC practice rate (53.5%). The NE however had the lowest KMC practice rate without reflecting the benefits of the same program carried out in NW. The fact that the NE has very few health workers as earlier stated could account for its low KMC practice rate because, the implementation and stepping down of KMC at the state level requires health workers which the region is in short supply of. The overall KMC practice rate in Nigeria is low, however, the significant progress recorded by the PRRINN-MCH training program can be adopted on a national level to improve KMC practice in our health facilities and community.

KMC like every clinical skill, improves with practice so it is not surprising that its level of practice was higher among health workers that cared for sick neonates, those that had functional incubators and those that were already practicing KMC. The regular practice of KMC contributed to a relatively higher level of practice than other health workers. KMC has been described as primarily a nursing intervention with medical support and Nurses have been described as the catalyst for KMC implementation and practice.[16] It is therefore not surprising that in our study Nurses had higher level of practice than doctors, as they probably were more involved in the practice of KMC.

Conclusion

In conclusion more than half of the Nigerian health workers that responded practiced KMC. The common reasons for not implementing KMC in our health facilities were not having a written policy and not having an adequate place for the mothers to stay.
We recommend that hospitals should have a written KMC policy in order to successfully practice it. We also recommend provision of KMC wards in order to provide a suitable environment for the implementation of KMC in our health facilities.

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