

Knowledge, Practices and Factors Affecting Exclusive Breastfeeding among Lactating Mothers with Babies aged 6 months to 1 year attending Magomeni Reproductive and Child Health Clinic, Kinondoni, Dar es Salaam: Descriptive Cross Sectional Study

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Kinondoni, Dar es Salaam: Descriptive Cross Sectional Study

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ABSTRACT

Background: Exclusive Breastfeeding defined as the infant has to receive only breast milk from his/her mother with the exception of other kinds of food for six months. Exclusive Breastfeeding helps to prevent diseases to infants and it reduces risk of ovarian cancer to mother.

Methodology: Descriptive cross sectional study was conducted among 124 lactating mothers with infants aged 6 months to one year attending Magomeni RCH Clinic in Kinondoni, Dar es Salaam. Simple random sampling procedure was used to obtain 124 lactating mothers. Data was collected from mothers who agreed to participate and signed the consent form by the use of close ended Swahili version questionnaire on assessing knowledge, practices and factors affecting Exclusive Breastfeeding among Lactating Mothers with Babies aged 6 months to 1 year attending Magomeni Reproductive and Child Health Clinic in Kinondoni district, Dar es Salaam.

Result: About 74 (59.7%) respondents had high knowledge on EBF and 92 (74.2%) respondents initiated breastfeeding within one hour after delivery while 77 (62.1%) practiced exclusive breastfeeding. Findings show that 64(51.6%) respondents denied that exclusive breastfeeding causes loss of shape of their breasts while 48 (38.7%) respondents accepted that exclusive breastfeeding causes loss of shape of their breasts. Only 12 (9.7%) respondents didn't know if EBF causes loss of breasts shape or not. Moreover, 19 (15.3%) respondents had physical difficulties/problems like cracking of nipples, inadequate milk, while 105(84.7%) didn't get any physical difficult. Therefore there is significant association between mothers belief of losing shapes of their breasts and EBF ($p=0.05$). Physical difficulties/problems to lactating mothers study is significantly associated with EBF ($p = 0.000$).

Conclusion: The overall knowledge among the lactating mothers with babies aged six months to one year was high and had good exclusive breast feeding practice. Although majority of the respondents are knowledgeable about EBF, the results show a gap between knowledge and actual practice within six months which is a recommended duration for Exclusive Breast feeding.

Keyword: breast feeding, lactating, mother, exclusive, practice, knowledge, Magomeni and Kinondoni,

Background

Exclusive Breastfeeding (EBF) has been defined by the World Health Organization "WHO" as the infant has to receive only breast milk from his/her mother, or expressed breast milk, and no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicine(1). WHO recommends EBF for the first six months of life, and thereafter continue breastfeeding for two years or longer along with complementary food (1). Benefits of exclusive breastfeeding to the child include a decrease incidence and severity of many infectious diseases such as diarrhea, otitis media, urinary tract and respiratory tract infections and obesity (2). EBF also increases the maternal-infant bonding. In the long run, it may decrease the risk of breast and ovarian cancers, and osteoporosis in the mother (3).

Despite the benefits of exclusive breastfeeding, the prevalence and duration globally is much far from the recommended universal coverage. Globally infants under 6 month of age, only 36% are exclusively breastfed. It rarely exceeds 30% in most regions of the developing world given their greater risk of infection and its consequences. The rate of exclusive breast feeding is low in Africa, especially in west and central Africa which is only 20%. Over the past 10 to 15 years exclusive breastfeeding rates have increased in the developing world as a whole and in many countries of Africa and Asia in particular; however, the progress has been modest, from 33% in 1995 to 37 % in 2008 in the developing world (4).

In Tanzania data from TDHS surveys indicate that exclusive breastfeeding among children under age 6 months has been steadily increasing, from 26% in 1991-92, to 41% in 2004-05, to 50% in 2010 and 59% in 2015-16 (5). Exclusive breastfeeding is regarded to be important for infants' survival. Indeed, of the 6.9 million under five children who were reported dead globally in 2011, an estimated 1 million lives could have been saved by simple and accessible practices such as exclusive breastfeeding. About 60% of under-five mortality is caused by malnutrition either directly or indirectly, whereby more than 2/3 of the deaths are associated with inappropriate breastfeeding practices during infancy (6). Breastfeeding practice can save many as 1.5 million infants' lives every year as it provides significant protection against diseases (7).

Efforts have been made by the Government, Donors, NGO and other stakeholders to protect, support and promote exclusive breastfeeding like raising public awareness through mass medias

but still there is an inadequate practice of exclusive breastfeeding, More than half (51%) of infants are breastfed within one hour after birth. Fifty-nine (59) percent of infants below age 6 months are exclusively breastfed (5). The 2015-16 Tanzania Demographic and Health Survey and Malaria Indicator Survey (5), indicated there are challenging factors that cause inadequate exclusive breast feeding practices.

Besides, the effort made by Ministry of Health Community Development Gender, Elderly and Children, still there is a challenge of inadequate exclusive breastfeeding practice in Tanzania. In Tanzania, 16 mothers out of 100 (16%) initiate breastfeeding within one hour after delivery while 84% of mothers initiate breastfeeding within 24 hours post-delivery (8). Despite the fact that majority of mothers (92%) gave colostrum to their infants, half of them did not know its benefits, 8% discarded colostrum demanding that it was not good for baby's health and they offered other fluids especially water before milk was secreted,

Furthermore, nearly all infants (98%) were breastfed but only 70% were being breastfed on demand while no child above 4 months was exclusively breastfed (8). Good achievement has been attained in Tanzania in case of breastfeeding. Despite the mothers (98%) breastfeed their babies, good breastfeeding practice is not yet attained. Only 16% of mothers initiate breastfeeding within one hour of birth, half of them do not know the benefits of colostrum (5). This study aimed to assess on knowledge, practices and factors affecting Exclusive Breastfeeding among Lactating Mothers with Babies aged 6 months to 1 year attending Magomeni Reproductive and Child Health Clinic in Kinondoni district, Dar es Salaam.

Methods

Study design and Setting

The study used descriptive cross sectional design. According to (9) descriptive cross-sectional design is defined as the design that involves the collection of data at one point in time. This study design was used because it is economical and easy to manage within the study period (10). This study was conducted at Magomeni RCH clinic located at Magomeni Health Centre in Kinondoni municipality. Kinondoni is one of the five municipalities within Dar es Salaam region; others are Ilala, Temeke, Ubungu and Kigamboni. Magomeni RCH clinic is the one among RCH clinics which provide services like antenatal services, vaccination, family planning services, postnatal

services and children treatments. Researcher chose this site because there is high number of lactating mothers who attend in this clinic approximately 40-50 mothers per day (20)

Study population

Study population is defined as the entire set of individuals or objects having some common characteristic (9). The study population was lactating mothers with children aged 6 months to 1 years attending Magomeni RCH clinic in Kinondoni Municipality. Researcher chose this population because these lactating mothers have already completed first six months of exclusive breastfeeding. Therefore they provided adequate information concerning their experience during exclusive breastfeeding.

Data collection instruments

The study used self-administered structured questionnaire in Kiswahili language translated from original English version and retranslated to English in order to check for consistency. The questionnaire was developed and modified to meet the objective of assessing knowledge, practices and factors affecting Exclusive Breastfeeding among Lactating Mothers. The questionnaire was divided into four parts; first part was about social-demographic characteristics with a total of five questions, second part was assessment of knowledge with a total of five questions, third part was assessment of practices with a total of three questions and fourth part was factors affecting exclusive breastfeeding with a total of five questions.

A scoring system was established whereas a correct answer was scored one mark and the summation of total score was computed to each participant. For the participant(s) who scored knowledge below 50% were considered to have low knowledge, 50-80% was considered to have moderate knowledge and 81-100% was considered to have high knowledge. Therefore the study questionnaire collected the intended data from lactating mothers with children aged 6 months to 1 year.

Sample size and Sampling Technique

This is the total number of study participants participating in a study (9). The sample size required was calculated by using statistical Formulae (12)

$n = \frac{Z^2 P(1-P)}{d^2}$ Where, n=sample size, Z=Z value for confidence level and P=expected proportion or prevalence and d= confidence interval and $Z^2 = 95\%$ of confidence level and equals 1.96 and P =expected prevalence of exclusive breastfeeding was 92%. It was obtained from the study titled; factors affecting exclusive breastfeeding among post-natal mothers in Kinondoni municipality, Dar es Salaam where they found prevalence of people having knowledge is 92% (11) and $d^2 =$ is the level of precision or sampling error and equals 5% (0.05)

So the sample size was determined as; $n = \frac{Z^2 P(1-P)}{d^2}$, $n = \frac{1.96^2 \times 92\%(100-92\%)}{5^2}$, n= 113 and researcher needed 10% of this value (113) due to the reasons that there is possibility of non-responses from participants. Therefore sample size was 124 lactating mothers having children with age of 6 months to one year.

Sampling is the process of selecting a proportion of the population to represent the entire population (9). The study used simple random sampling method; simple random sampling is defined as sampling whereby a sampling frame is created by enumerating all members of population, and then selecting a sample from the sampling frame through completely random procedures (9). In this study the sample was obtained by simple random sampling by employing lottery method, whereby, pieces numbered either number 1 or 2 were given to the participants, then the participants were asked about the paper number each one has picked those with the paper numbered 1 were selected to participate in the study. This were done repeatedly until the required sample size of lactating mothers with children aged 6 months to 1 year were attained.

Data Collection Methods

Researcher used self-administered structured questionnaire for data collection, whereby researcher distributed them to participants in separate rooms and fill questionnaire to ensure privacy. Before administering the questionnaire, verbal informed consent was obtained from participants. Moreover, code numbers was used instead of names to ensure confidentiality. The researcher was directly involved in data collection process with a research assistant for data collection. Pilot testing was done at Mwenge RCH whereby, 40 lactating mothers with children aged 6 months to 1 year were recruited to assess understanding of the questionnaire in gathering

intended information and the queries was identified and corrected to avoid methodological errors.

Data analysis

The data was entered in computer, cleaned and coded then analyzed using statistical package for social sciences (SPSS) software version 23.0. From all participants concern with social-demographic characteristics, knowledge and practices towards exclusive breastfeeding and also facilitators and barriers of exclusive breastfeeding will be entered, cleaned, coded, analyzed and finally summarized using descriptive statistics of frequencies and percentages and tables. Also chi square test was used to determine association between factors affecting EBF and EBF practices. Cross tabulation used to find out the factors associated to exclusive breast feeding. Independent variables shown significant associated with ($p \leq 0.05$) to the dependent variable (EBF) and data tested by using Chi-square.

Results

Demographic Characteristics of the Participants

The age of the women was between 15 to 49 years. Findings revealed that, 39 (31.5%) age group ranging between 25-29 years were the most dominant group involved in the study compared to other age groups. Most were married 87 (70.2%), 87 (70.2%) study participants had one to two children. Also, findings showed that, 63 (50.8%) had primary school level of education and 56 (45.2%) were house wife. The demographic characteristics are further shown on the table 1.

Table 1: Socio demographic characteristics of respondents

Variable	Frequency	Percent (%)
Age group	8	6.5
15-19	35	28.2
20-24	39	31.5
25-29	25	20.2
30-34	11	8.9
35-39	6	4.8
40-44	0	0
45-49		

Children number		
1-2	87	70.2
3-4	31	25
5-6	6	4.8
Marital status		
Single		
Married	15	12.1
Cohabiting	87	70.2
Divorced	22	17.7
Widowed	0	0
Others	0	0
Occupational status		
House wife	56	45.2
Peasant	0	0
Self employed	45	36.3
Employed	22	17.7
Student	1	0.8
Others	0	0
Level of education		
No formal education	0	0
Primary education	63	50.8
Secondary education	49	39.5
College	12	9.7
Others	0	0

Knowledge on Exclusive Breastfeeding

Majority of the respondents 97 (78.2%) know the meaning of exclusive breastfeeding which is giving baby only breast milk without any food or drink with exception of prescribed medicines. Whereas, 118 (95.2%) of respondents knew the exact recommended duration of exclusive breastfeeding. 119 (96%) of the respondents knew that, EBF is important for the child to prevent young child from infection, 124 (100%) provide essential nutrient to baby and 86 (69.4%) knew that EBF can be used as family planning method.

Table 2: Knowledge of respondents about exclusive breast feeding

Variables	Frequency	Percent (%)
Meaning of EBF		
Giving the baby breast milk and infant formula	2	1.6
Giving the baby breast milk and clean water	10	8.1
Giving baby only breast milk without any food or drink with exception of prescribed medicines	97	78.2
Giving the baby breast milk and vitamin	15	12.1
EBF provides essential nutrients to baby		
Yes	124	100
No	0	0
I don't know	0	0
EBF can be used family planning method		
Yes		
No	86	69.4
I don't know	23	18.5
	15	12.1
EBF helps to protect baby from diseases		
Yes		
No	119	96
I don't know	3	2.4
	2	1.6

Levels of Knowledge about Exclusive Breast Feeding

The overall knowledge of respondents was graded as low, medium and high knowledge. Therefore, the study revealed that, majority of respondents 74(59.7%) had high knowledge compared to other levels like, 44 (35.5%) moderate knowledge and 6 (4.8%) had low knowledge.

Table 3: Level of knowledge of respondents

Variable	Frequency	Percent (%)
Knowledge		
Low knowledge	6	4.84
Moderate knowledge	44	35.58
High knowledge	74	59.68

Exclusive Breastfeeding Practices

Concerning the exclusive breastfeeding practices of the mothers, most of the respondents 92 (74.2%) initiated breastfeeding within one hour after birth, 77 (62.1%) practiced exclusive breastfeeding for the first six months whereas 47 (37.9%) didn't practice EBF. Also most of respondents started feeding their babies supplementary food at age of six months 77 (62.1%). Other information are shown in table 4

Table 4: Exclusive breastfeeding practices

Variable	Frequency	Percent (%)
Breastfeeding initiation		
Within one hour	92	74.2
After one hour	6	4.8
After six hours	23	18.5
After 24 hours	3	2.4
Exclusive breastfeed		
Yes	77	62.1
No	47	37.9
I don't know	0	0
Supplementary food initiation		
Within one month	9	7.3
Within two months	38	77
After six months	30.6	62.1

Association between Knowledge and Exclusive Breast Feeding practice

Concerning relationship between knowledge of respondents and EBF practice, study revealed that there is significant association between knowledge level and exclusive breastfeeding ($p = 0.001$). As this study revealed that high percent of women have adequate knowledge about exclusive breast feeding, 44 (35.58%) had moderate knowledge and 74 (59.68%) had high knowledge significantly influenced exclusive breast feeding practice among lactating mothers. Other factors are shown in table 5.

Table 5: Association between knowledge about EBF and exclusive breastfeeding practice

	Breastfeed exclusively			p-value
	Yes	No	Total	
Knowledge about EBF				
Low knowledge	1	5	6	0.001
Moderate knowledge	21	23	44	
High knowledge	55	19	74	
Total	77	47	124	

Association between Factors affecting EBF and Exclusive Breastfeeding Practice

Concerning partners or spouses support to lactating mothers study revealed that there is significant association between exclusive breastfeeding and support of lactating mothers from their partners or spouses ($p = 0.000$). Also, study findings showed that there is significant association between health education about EBF and exclusive breastfeeding where p-value was 0.019 and there is significant association between health educations about baby positioning during breastfeeding and exclusive breastfeeding ($p = 0.025$). Other information is condensed in table 6.

Table 6: Association between Factors affecting EBF and Exclusive Breastfeeding Practice

		Exclusively breastfed		p- value
		Frequency (n)	Percent (%)	
Partner/spouse support	Yes	114	91.9	0.000
	No	10	8.1	
	I don't know	0	0	
Health education on EBF from health care provider	Yes	118	95.2	0.019
	No	6	4.8	
	I don't know	0	0	
Health education on baby positioning	Yes	116	93.5	0.025
	No	8	6.5	
	I don't know	0	0	
Age group	15-19	8	6.52	0.190
	20-24	35	8.2	
	25-29	39	31.5	
	30-34	25	20.2	
	35-39	11	8.9	
	40-44	6	4.8	
	45-49	0	0	
Numbers children	1-2	87	70.2	0.678
	3-4	31	25	
	5-6	6	4.8	
Marital status	Single	15	12.1	0.168
	Married	87	70.2	
	Cohabiting	22	17.7	
	Widowed	0	0	
	Divorced	0	0	

Occupational status	House wife	56	45.2	0.355
	Self employed	45	36.3	
	Employed	22	17.7	
	Student	1	0.8	
Education level	No formal education	0	0	0.349
	Primary education	63	50.8	
	Secondary education	49	39.5	
	College	12	9.7	

Association between Factors hindering EBF and Exclusive Breastfeeding

Findings show that 64(51.6%) respondents denied that exclusive breastfeeding causes loss of shape of their breasts while 48 (38.7%) respondents accepted that exclusive breastfeeding causes loss of shape of their breasts. Only 12 (9.7%) respondents didn't know if EBF causes loss of breasts shape or not. Moreover, 19 (15.3%) respondents had physical difficulties/problems like cracking of nipples, inadequate milk, while 105(84.7%) didn't get any physical difficult. Therefore findings revealed there is significant association between mothers belief of losing shapes of their breasts and EBF ($p=0.05$). Physical difficulties/problems to lactating mothers study show that there is significant relationship with EBF ($p = 0.000$).

Table 7: Association between Factors hindering EBF and Exclusive Breastfeeding

	Exclusively breastfed		p- value
	Frequency	Percent (%)	
Breasts loosing shape			
Yes	48	38.7	0.050
No	64	51.6	
I don't know	12	9.7	
Physical difficulties			
Yes	19	15.3	

No	105	84.7	0.000
I don't know	0	0	

DISCUSSION

Knowledge, Practices and Factors Affecting Exclusive Breastfeeding

Majority of the respondents 97 (78.2%) know the meaning of exclusive breastfeeding which is giving baby only breast milk without any food or drink with exception of prescribed medicines. This finding was slightly lower than study results done in Zanzibar at mnazi Mmoja hospital whereas (82.2%) respondents knew the correct definition of exclusive breastfeeding (13). Also, findings show that 118 (95.2%) respondents knew the exact recommended duration of exclusive breastfeeding which is higher than the results of study which was done in Zanzibar at Mnazi Mmoja clinic where (77.8%) respondents knew the recommended duration for exclusive breastfeeding (13).

It was found that (74.2%) respondents initiated breastfeeding within one hour after birth. This finding is different from the results which were found by TDHS-MIS (5). This practice of initial breastfeeding within first hour has influence toward exclusive breastfeeding. But only 62.1% of infants were exclusively breastfed which is slightly higher than 59% found by TDHS-MIS, (5).

According to the study maternal knowledge about exclusive breast feeding, partners/spouse support, health education from health care providers about exclusive breastfeeding and health education about baby positioning during breastfeeding are the four factors which had significant association with exclusive breastfeeding practice. This study revealed maternal knowledge about exclusive breastfeeding has significantly associated with their practice (p-value = 0.001). This means that women with high and moderate knowledge level do practice breastfeeding exclusively. These findings are nearly similar with the results of the study which was done in Ambo Woreda West shoa zone Oromia region, Ethiopia where EBF practice was more common among knowledgeable mothers (p = 0.003) (14).

This study also revealed that high percent of women got support from their partners/spouses 114 (91.9%) during EBF and also support from partners/spouses has significantly associated with

their practice ($p\text{-value} = 0.000$). This is supported by the study done in United States where they found that role of father was the one of the strongest influences on the initiation and duration of exclusive breastfeeding where 75% of mothers in the study identified father as the important decision to breastfeed exclusively. Also this study results are supported by results from another study done in Australia whereas husbands support had a significant association with EBF practice. A mother who was supported by her husband's practiced EBF better than those who were not supported (15).

This study revealed that most of mothers who got health education about exclusive breastfeeding are the one who practiced more exclusive breastfeeding ($p = 0.019$). This is supported by the study conducted at Arba Minch Zuria in Ethiopia in which findings from in-depth interviews indicated mothers' knowledge of optimal breastfeeding is due to an exposure to health education given by health extension workers (16).

This study revealed that there is significant relationship between health education about baby positioning and exclusive breastfeeding ($p\text{-value} = 0.025$). This results are not so new because findings from a study which was done at St. Michael's Hospital in Bristol (UK) showed that mothers with high scores had good baby positioning technique and breastfed exclusively for six months ($p = 0.02$) (17). This would probably be due to that many health facilities in Tanzania have breastfeeding guidelines where health workers educate and demonstrate breastfeeding practices as well as issues of attachment and how to hold the baby during breastfeeding.

Findings uncovered that mothers' fear of losing shape of their breasts and physical difficulties/problems like cracking nipple, lack of milk secretion and mothers' illness hinder exclusive breastfeeding. Results show that there is significant relationship between mothers losing shape of their breasts and exclusive breastfeeding where ($p = 0.05$). This is in line with the study done in Ayeyarwaddy Region in Myanmar whereby lactating mothers reported that, they are worried that exclusive breastfeeding would make them less attractive so they can feed the baby formula milk also these women take injections to stop producing breast milk (18).

This study confirmed that mothers who have had physical problems/difficulties during first 6 months were less likely to have exclusively breastfed their babies than mothers who didn't encounter problems ($p = 0.000$). This is supported by study done in SMBD-Jewish General

Hospital, Montreal, Quebec, Canada where by women who have had pathological problems during the first 6 months were 86% less likely to have exclusively breastfed their infants than women who did not encounter such problems (19)

This study revealed that there is no significant association between occupation status of the lactating mothers and exclusive breastfeeding practice ($p = 0.355$). This is different from the study done in in Motta town, East Gojjam zone, Amhara Regional State, Ethiopia where unemployed mothers practiced EBF better than employed mothers (14). In another study done in El Sabbah Hospital Juba-South Sudan mothers' occupation was also found to be insignificantly associated with EBF (10).

Study also revealed that there is no significant association between number of children mothers have and exclusive breastfeeding practice ($p = 0.678$). This is contrast to the study which done in El Sabbah Hospital Juba-South Sudan where mother with less children tend to exclusively breastfed more than the ones with many children (10). This can be because they are not driven away from their babies by the increasing responsibilities of the older ones. Also, study revealed that there is no significant association between marital status of the mothers and exclusive breastfeeding practice ($p = 0.168$). This is in line with the study done in El Sabbah Hospital Juba-South Sudan where maternal marital status was not significantly associated with EBF (10). Extended family can be cause, because even single mother can still get support from the relatives.

Study revealed that there is no significant association between education level of the mothers and exclusive breastfeeding practice ($p = 0.349$). This doesn't line up with the results from the study which was done in Aminu Kano Teaching Hospital Nigeria where results show that there is association between educational attainment of lactating mothers and EBF practice (20). Study found that there is no significant association between age group of the mothers and exclusive breastfeeding practice ($p = 0.190$). This is similar to the results from the study which was done at El Sabbah Hospital Juba-South Sudan where age of the mother was not significantly associated with EBF (10). This can probably be due to the fact that exclusive breastfeeding depends on mothers' willingness to breastfeed which is influenced by family support.

Limitations

Recall bias was a potential limitation due to the fact that information on EBF based on recall since birth and some lactating mothers might not remember when they specifically introduced other liquids or solids. To minimize the recall bias above, the researcher used check and balance technique where by a researcher was repeating asking questions in a different way which requires the same answer as from the previous asked question so as to see the consistency and validity of the responses.

Conclusion

Most of mothers had high knowledge about exclusive breastfeeding. Few mothers practice exclusive breastfeeding although most of them had high knowledge. Therefore there is a need to strengthen partners/spouses support; health workers counseling especially couple counseling, management of mothers' physical difficulties like cracked nipples through proper attachments, health workers training mothers on baby positioning.

List of abbreviations

DMO: District Medical Officer.

EBF: Exclusive breastfeeding.

RCH: Reproductive and child Health.

SPSS: Statistical Package for Social Science.

TDHS-MIS: Tanzania Demographic and Health Survey and Malaria Indicator Survey

UNICEF: United Nations International Children's Emergency Fund

WHO: World Health Organization.

DECLARATION

Ethical approve and consent to participate

The ethical clearance approval was obtained from the District Medical Officer from Kinondoni municipality, Medical Officer In charge of Magomeni Health Center in Kinondoni Municipality. Then the overall consent to participate to the community was provided by the Kinondoni municipality. Also both written and oral informed consent to lactating mothers with children

aged 6 months to 1 years attending Magomeni RCH clinic in Kinondoni Municipality were given before starting data collection so as to ensure confidentiality and autonomy of the respondents, no names of the respondents were involved in the questionnaires.

Consent for publication

Not applicable

Availability of data and materials

The datasets used are available from the corresponding author on reasonable request.

Competing interest

The authors declare that they have no competing interests

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Author's contributions

A.B initiated the study and contributed much on study design and data collection. F. M contributed on data processing and analysis. D. P contributed on close supervision, guiding the conceptualization of the study and review of the study design, data analysis, and manuscript writing and improvement.

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