

## Safe Motherhood Health Related Behaviors and Cultural Practices: Mixed Methodology

Hadayat Abdel-Raouf Amasha<sup>1</sup>, Eman Awad Siddig<sup>2</sup>

<sup>1</sup> Assistant professor of Maternity, Gynecological and Obstetrical Nursing, Faculty of Nursing, Port-said University, Egypt

<sup>2</sup> Assistant professor of Community Health Nursing, Head of Department of Family and Community Health Nursing, Khartoum University, Sudan

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### Abstract

**Background:** Safe motherhood ensures that all women receive quality of health care and maintain a healthy life throughout pregnancy and childbirth. **Aim:** Explore safe motherhood health related behaviors and cultural practices and identify factors can influence behaviors and practices related to safe motherhood among Sudanese women in urban and rural areas.

**Methods:** A mixed method-sequential explanatory design was carried out which comprehensively considered the experiences of both rural and urban women. An exploratory descriptive hospital based design was chosen for the implementation of the phase one in apparently health Sudanese urban women attending to different three governmental health centers. Ethnographic approach was chosen for the second phase of the study of Sudanese rural women. For Phase One (quantitative study): a purposive sample of 120 women was randomly selected. For phase two (qualitative study), twelve women were included and the snowball sampling was used. For Phase One, a semi-structured interview was designed to collect data from targeted population. For Phase Two, an interview guide was used to conduct the in-depth face-to-face interviews at the women's residence according to their preference.

**Results:** The results revealed that the mean age of the women under study was  $31.71 \pm 8.35$  years. The most common traditional practices used by studied women were fire pit, followed by herbal fluids, nutritional taboos, hot bath, cold bath, and the least used practices was remedies ointment. Concerning most common types of nutritional taboos and foods avoided by women during pregnancy, 48.60% of the women avoided eating eggs during pregnancy and more than one third avoided eating honey. However, eating dried dates was avoided by (12.20%) of the studied women.

**Conclusion:** The study findings indicated that most of studied women used traditional practices during pregnancy and postpartum period. Health education program regarding traditional practices are recommended to ensure safe motherhood among Sudanese women.

**Keywords:** Cultural practices, health related behaviors, safe motherhood.

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### I. Introduction

Safe motherhood ensures that all women receive quality of health care and maintain a healthy life throughout pregnancy and childbirth (**World Bank, 2012**). In addition, access to contraception, antenatal and postnatal care, suitable responses to major discomfort and complications, skilled birth attendants and female genital cutting/circumcision have been discussed as basic issues of safe motherhood (**Abdel-Tawab & El-Rabbat, 2010**).

According to the **WHO (2010)**, Sudanese women who are living in rural areas have a significant lower quality of health; this may be due to inadequate maternal services, socio-cultural factors, and lack of safe motherhood practices. Cultural practices and poor accessibility to maternal health care could influence decisions concerning safe motherhood. These practices can therefore have either positive or negative effect on maternal health outcomes (**Emelumadu 2014**). In addition to these factors, **Simkhada et al. (2008)** stated that the cost of accessing care and the availability of skillful health care providers are two important factors that help women in rural areas to use maternal services. **Serizawa et al. (2014)** reported that health risk behaviors concerning harmful practices and underutilization of maternal services were often reported among women in Sudan, especially those living in village areas. As well, socio-economic and cultural factors can influence perceptions and behaviors related to safe motherhood among Sudanese women in rural areas.

According to **Serizawa et al. (2014)**, religion, beliefs, and practices can influence on Sudanese village women's decision to utilize maternal services. The same study revealed that, all participants attributed the

underutilization of maternal services caused by poverty to be the will of God. As well, **Harandy et al.(2010)** mentioned that, Muslim women believe that the outcomes of any health-related matters rest in God's hands. Another study conducted in Eastern Sudan revealed that this wrong belief could be a powerful barrier regarding accessing maternal services (**Furuta & Mori's 2008**).

Food taboos specifically all over communities in Africa most often exclude the pregnant women from the consumption of nutrient which are needed by the expectant mother and fetus. A very recent study conducted in Sudan by **Tahir et al. (2018)** identified that a large group of pregnant women who were refraining to eat certain foods during pregnancy was due to food taboos. Another recent study conducted in Northern Tanzania reflects food intake must be decreased during pregnancy to prevent a large baby, traditions restrict pregnant women from eating any meat or drinking milk from their sixth month of pregnancy until delivery, and restrict caloric intake especially from fatty or sweet foods throughout their pregnancies (**Lennox et al., 2017**).

According to **WHO (2012)**, a maternal mortality ratio of 730 per 100,000 live birth was detected in 2010, the improvement of maternal services, cost accessing care and the availability of obstetricians and /or skilled midwives to ensure safe motherhood are the most significant health issues in Sudan.

Maternity healthcare attended by unskilled traditional birth attendance (TBA) is still the most common choice among women in most villages. Cultural beliefs and traditional practices are also most preferred approaches among women in rural areas. These perceptions are further reinforced by the strong trust in TBA's experiences, and the local beliefs that home birthing by TBAs ensures better quality of support. These perceptions may act as a barrier for Sudanese women to select hospital birth offered by trained physicians or midwives (**Serizawa et al., 2014**).

Furthermore, the utilization of trained midwives is used as an indicator to evaluate progress in the reduction of maternal mortality (**Save the Children, 2010**). The underutilization of contraception has been highlighted as another barrier to safe motherhood for the vast majority of Sudanese women (**Serizawa et al., 2014**).

Sudan National Committee on Traditional Practices (**SNCTP, 2009**) mentioned that more than 90% for all Northern states Female Genital Mutilation/Cutting (FGM/C) is widely practiced by Sudanese women. Many factors contributed to these harmful cultural practices, which increase Sudanese women's health risks. Therefore, it is necessary to conduct researches addressing women's health beliefs and practices to improve safe motherhood.

Maternity care focus on the women as a whole without segmenting the women as a patients or healthy persons. Maternity nursing professional care focus on culture or traditional practices that enable or help women, families, and communities to maintain favorable healthy conditions. Consequently, the purpose of the current study was to provide a detailed and reliable evidence base that relates to traditional/ cultural practices and health behaviors related to safe motherhood among women of reproductive age and identify the factors leading to use of these practices.

**Aim:** This research aimed to:

- Explore safe motherhood health related behaviors and cultural practices among Sudanese women in urban and rural areas.
- Identify factors can influence behaviors and practices related to safe motherhood of Sudanese women in urban and rural areas.

**Research questions:**

1. What are the health behaviors and cultural practices used by Sudanese women related to safe motherhood?
2. What are the factors leading to the use of traditional practices among Sudanese women related to safe motherhood?

## **II. Material And Methods**

**Research design:** A mixed method "sequential explanatory" design (using multiple data sources in an investigation to produce understanding) was carried out which comprehensively considered the experiences of both rural and urban women and checking out the consistency of findings generated by different data collection. **Gilbert (2006)** stated that while qualitative and quantitative research approaches can provide different perspective levels on the social world, combination of both approaches can be used to explore different dimensions of a problem.

An exploratory descriptive hospital-based design was chosen for the implementation of the phase one on apparently health Sudanese women attending to different three governmental health centers to help explain, and expand upon the findings of the initial quantitative round. An exploratory design is generally considered to be more appropriate to studies in which little is known about the area (**Andrew & Halcomb, 2009**).

Ethnographic approach was chosen for the second phase of the study, as the method is consistent with the aim of exploring health behaviors and cultural practices of Sudanese rural women. An ethnographic method allows the researcher to understand an individual's behavior within a particular culture (Fusch, et al., 2009).

**Credibility:** Credibility and confirmability as described by Lincoln & Guba (1985) were applied to ensure trustworthiness of the present study. Credibility refers to confidence in the truth of data collection and interpretation from researchers and readers. In the present study, ensuring credibility was performed by being satisfied that participants understood questions and agreed upon what researchers wrote down during the interviews. Credibility of this study was also ensured by the prolonged commitment of the researchers with the study participants and with data during the analysis phase. Confirmability refers to objectivity of data collection and analysis. In the current study, this was achieved by keeping an audit trail, and a reflexive journal which helped to put researchers' experiences aside during collection and analysis of data.

**Participants and sampling:** The target population for this study was Sudanese married women and of reproductive age and have experience at least one a live child within the past two years. The identification of potential participants for the study was complex. The lack of a national published data base made it impossible to accurately assess the size of population which consequently made it impossible to accurately calculate a sampling ratio.

For Phase One, (quantitative study): A purposive sample of 120 women was randomly selected. Excluded were those who not Sudanese (differing cultural backgrounds because they anticipated that different women may have different practices in the use of traditional practices). Richard and Morse (2007) suggested in ethnographic studies that the researcher gathers information from general informants and from key informants. For phase two (qualitative study), twelve women were included and the snowball sampling (also known as chain-referral sampling) was used. The participants were identified as key informants regarding how they comprehended behaviors and cultural practices related to safe motherhood. Most of women did not complete primary education and only two of them were employed as teachers at basic education school.

**Field work:** The study proceeds in two phases. Phase one is a hospital base, this phase focuses on women living in urban areas of Khartoum state, capital of Sudan and has two main objectives: Identify the traditional practices used by Sudanese women during pregnant and postpartum period; investigate the factors leading to use of traditional practices by Sudanese women during pregnant and postpartum period.

Phase two of the study is a community based and allowed full explanation of cultural practices and behaviors related to safe motherhood among women who living in rural areas of Nourth Kurdufan state, south-center Sudan and has one main objective which is: to explore health behavior and cultural practices used by rural women related to safe motherhood.

**Data collection procedure:** For Phase One (quantitative study), a semi-structured interview was designed by researchers after reviewing the available national and international relevant literature and years of experience in the maternity nursing field to collect data from targeted population. Both close and open ended questions were used to answer the research questions, content validity was tested by group of experts as well.

For Phase Two (qualitative study), an interview guide was used to conduct the in-depth face-to-face interviews at the women's residence according to their preference. Each interview took about 35-45 minutes, no audio tapping was performed, and the extensive field notes for each interview were made by the researchers during data collection. In-depth interviews allowed full explanation of practices and behaviors related to safe motherhood with a particular focus on views of antenatal, natal, preference of delivery attendants, postnatal and practices of female circumcision.

Richard and Morse, (2007) stated that ethnographic data gathering involves immersion in the study setting and the use of interviews of informants, interpretation by the researchers of cultural patterns. Ethnographic research in nursing involves face-to-face interviewing with data collection. In the current study, both data collection were conducted using Arabic language.

**Data analysis:** The analysis of data served to answer the research questions. For the statistical analysis of Phase One, Statistical Packages of Social Sciences (SPSS) version 20 was used. Frequencies, percentage, mean, standard deviation, Chi-square and Pearson correlation were used.

For the analysis of phase Two, all data ensured from the transcriptions were read, coded and analyzed immediately. To obtain an overall flavor of the participants' responses, the research team completed this process in several steps: 1) Reading the transcriptions and writing memos; 2) Generating labels to reflect initial coding; 3) Using codes to develop aggregating major themes and sub-themes by aggregating similar codes together; 4) Finally, researchers re-read the themes and sub-themes and categorized them into one of the four themes to ensure goodness of fit.

**III. Result**

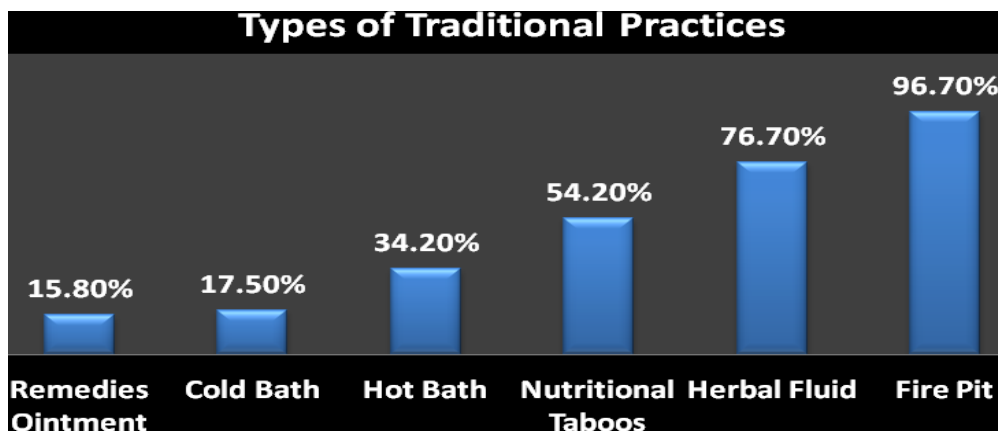
**Characteristics of study sample:** In quantitative study (Phase one), the mean age of the women under study was  $31.71 \pm 8.35$  years. In regard to religion, all of them (100%) were Muslims, 62.5% had adequate family income and 64.2% were employed. Concerning level of education, almost half of the participated women (49.2%) graduated from university. In regards to the marital status, a minority (2.5%) were divorced and the same percent (2.5%) were widow.

**Figure (1)** illustrated that most of studied women (98%) used traditional practices during their pregnancy and postpartum periods.



**Figure (1)** Display Sudanese women according to use of traditional practices

Figure (2) showed types of traditional practices used by studied women during antenatal and post-natal periods. The figure illustrated. The most common traditional practices used by study sample were fire pit (96.7%), followed by herbal fluids (76.7%), nutritional taboos (54.2%), hot bath (34.2%), cold bath (17.5%), and the least used practices was remedies ointment (15.8%).



**Figure (2)** Types of traditional practices used by study sample during antenatal and post-natal periods.

When asking women under study about the motivation for using fire pit during antenatal and postnatal period, the table indicated that majority of them (96.7%) reported that, the fire pit was the main traditional practice used by Sudanese women, followed by herbal fluids (76.7%), nutritional taboos (54.2%), while remedies ointments were the least used by study sample (15.8%). Regarding to motives to use fire pits, most of

participants (87.1%) reported that the fire pit makes the skin brighter, 80.2% of them reported that it satisfies their husbands, (64.7%) reported for purification and cleansing, while 62.9 of them reported that it gives a feeling of comfort. Only 13.8% and 2.6% of the women reported that it has a good odor and alleviates joint pain respectively Table (1).

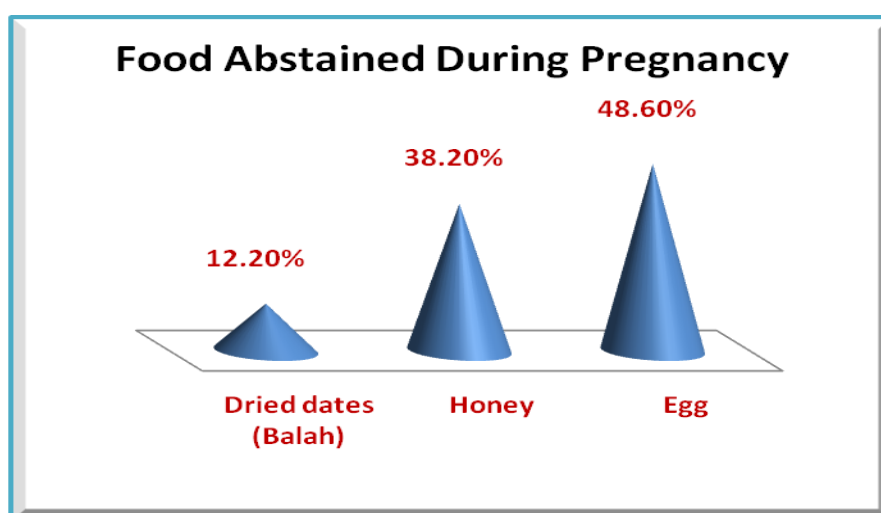
**Table (1): Distribution of Women According to FGM/C and Their Rate and Motivation to Use Fire Pits during Antenatal or Postnatal Periods**

Items	Frequency	Percentage
<b>FGM/C(n= 120)</b>		
Yes		97.0
No		03.0
<b>Rate of use fire pits (dukhan) per week (n= 116)</b>		
1-2	20	17.2
3-4	80	69.0
≥5	16	13.8
<b>Motivation for using fire pits (n= 116)*</b>		
Makes the skin brighter	101	87.1
To satisfy husband	93	80.2
For purification and cleansing	75	64.7
Gives a feeling of comfort	73	62.9
For the baby	58	50.0
Has good odor	16	13.8
Alleviates joint pain	3	2.6
Others	3	2.6

\*Answers are not mutually exclusive.

\*FGM/C = Female genital mutilation/ cutting.

Figure (3) the figure reflected the most common types of nutritional taboos and foods avoided by women during pregnancy, 48.60% of the women avoided eating eggs during pregnancy. More than one third (38.20%) avoided eating honey. However, eating dried dates (Balah) was avoided by (12.20%) of the studied women.



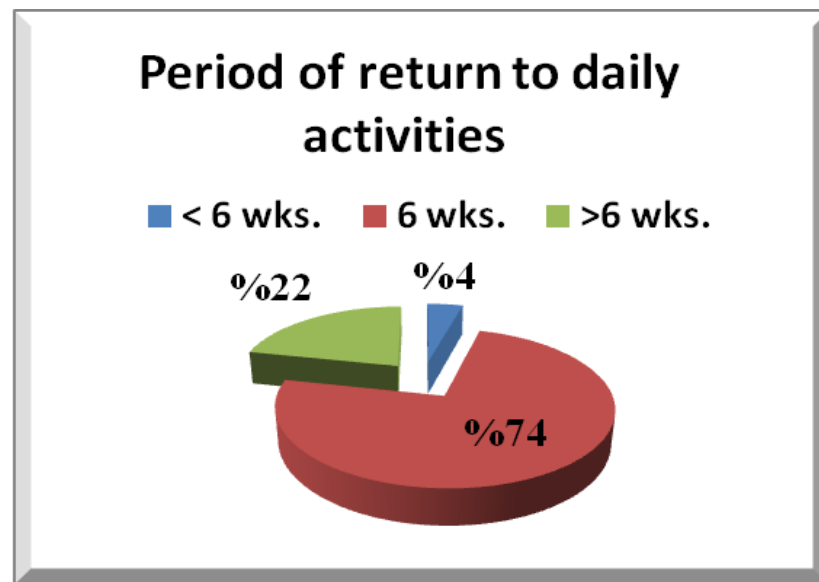
**Figure (3) most common types of food abstained during pregnancy**

Table (2) demonstrated the distribution of women according to their use and concept of black Henna during pregnancy. The table indicated that majority of study sample (80%) do not use black henna during pregnancy, (65.8%) use it during postpartum, and (86.7%, 87.5%) mentioned that black henna has harm effect on mothers and fetus respectively.

**Table (2): Distribution of Women According to Their Use and Concept of Black Henna during Pregnancy (n=120)**

Items	Frequency	Percentage
<b>Use of black Henna during pregnancy</b>		
yes	24	20.0
No	96	80.0
<b>Use of black Henna during post-partum</b>		
Yes	79	65.8
No	41	34.2
<b>Concepts regarding harm effects of black Henna</b>		
<b>Black Henna during pregnancy has a harm effect on the mother</b>		
Yes	104	86.7
No	13	10.8
Don't know	3	2.5
<b>Black Henna during pregnancy has a harm effect on the fetus</b>		
Yes	105	87.5
No	15	12.5
Don't know	0	0.0

As regards the time for women to go back to their daily activities after birth, figure (4) illustrates that the highest percentage (74%) of the studied women returned back to their daily activities at the sixth week after birth; even if she suffers from health problems, followed by 22% after 6 weeks, and the rest of women (4.0%) returned to their daily activities before the sixth week.



**Figure (4):** The period taken by study sample to return back to their daily activities after birth.

**Qualitative findings**

All of the data presented in the current part of research related to behaviors and practices of women who live in rural areas of North Kordofan State, Sudan. The results extracted four main themes from the interviews of rural women.

**Theme (1) Cultural barriers to accessing maternal health care:**

**Sub-theme 1.1: Pregnancy is normal; there is no need for prenatal healthcare services and it is manageable on the individual level.**

Numerous women believed that, pregnancy is not a disease and there is no need for antenatal follow up during pregnancy. On the other hand, one woman declared that "pregnancy is bestowed from Allah (God) and we should accept all the minor discomforts which related to this period".

**Sub-theme 1.2: Rural women prefer traditional birth attendants (TBAs) because they are shamed from male physicians during delivery, and envy from people in the hospital.**

As regards to opinion towards site of delivery, rural women mentioned that they choose delivery at home by TBAs, and showed a preference for Daya. This was portrayed in the following statement: *"I feel ashamed from doctors during birth and evil eyes of the people on the hospital"*.

Majority of women mentioned that *"the hospital is overcrowded and they don't want their babies to be affected by people's evil-eye"*. So, majority of them prefer home birth in a traditional way, in hands "Daya"; a local birth attendant. Some women chose home birth because they felt more relaxed in a familiar surroundings. Majority of them expressed their satisfaction with the care provided by TBAs during home delivery. Only one participant stated that she went to hospital immediately after home birth because she suffered from early post partum hemorrhage.

According to what was the good practice perinatal, more than half of women mentioned *"place henna is an important habit of village women"*. The other half of women indicated a preference to henna before labor, *"Place prenatal henna from the habits of village ladies"*.

**Theme( 2) Food taboos and traditional practices related to nutrition during pregnancy and puerperium.**

**Sub-theme 2.1. Food beliefs and practices related to pregnancy**

Eating less food during pregnancy lets baby come easier; keeping baby slim and preventing difficult labor. Some mothers said that during the last month of pregnancy, I reduced eating so that the baby is born easily. One woman reported *"I prefer my son to be slim to facilitate birth and not to be envious"*

When women were asked "what food do you avoid during pregnancy and why? A majority of women reported that it is village traditions that prevent them from eating certain foods during pregnancy such as: egg, beef, honey, dried dates, fish, and Al-hargel "Solenostemmaargel".

Half of studied sample mentioned that *"fish is fragrant as a foul and causes nausea and impurity"* The majority of women mentioned that "consumption of honey and/or "Balah" are said to cause abortion".

Several women replied "eggs during pregnancy "makes the child dumb", few of the participants stated that beef meat is said to cause difficult delivery. Other types of food (citrus fruit) are believed to cause retardation of fetal growth or increased fetal and maternal susceptibility to infection. This tradition restricted women from eating the previously mentioned foods from beginning of pregnancy until delivery.

Majority of participants mentioned other traditional cultural and behavioral practices associated with pregnancy, it was disclosed that one of the practices related to pica during pregnancy is "eating coal and sea mud or salty clay.

**Sub-theme 2.2. Food beliefs and practices during puerperium.**

The majority of participants believed that they should eat large quantities of food during the post partum period and eat special types of food. The most common type was "Madedda" which contain millet flour; wheat flour; starch; milk powder; turmeric powder and sugar.

On the other hand, the Sudanese culture forbade women during post partum period from eating cold meals, drinking cold fluids. Other foods avoided included beef, onion, garlic, fats and chili; as it was believed many of respondents mentioned that those kinds of foods are not good for both mother and newborn health.

**Theme (3) Practices related to mother and her child during post-partum period:**

**Sub-theme 3.1: Feeling vulnerable during the puerperal period.**

According to Sudanese culture belief mother after birth should staying indoors and does not leave the house for 40 days so as not to be envied. If someone comes to visit the family, mother should be locked in a far room and do not meet the guests.

All women stated that mother and her baby must stay at home for 40 days and may be more after delivery to keep the evil spirits away. These practices prevent women from utilization of post-partum follow-up healthcare.

**Sub-theme 3.2: Sexual precautions.**

According to postpartum traditional practices related to marital relationship, five participants reported that they do not have intercourse after birth, till the sixth 6 months or more. On the other hand, most of the participants indicated that they go back to birth attendance to repair vagina (re-infibulations) after each birth, and some of them mentioned that the repair is according to the desire of the husband. All of them are doing kneel over a fire pit to purify the birth canal.

**Sub-theme 3.3: Perceived health implications associated with breast feeding and weaning.**

Breast feeding may cease if the child suffering from diarrhea. All participants stated that lactated mothers abstain from breastfeeding their children if the child suffers from diarrhea and said that "*breast milk increases diarrhea in children*". All mothers said that the duration of breastfeeding is two to three years. As for the weaning of children, most of the participants said that they were doing a fantastic job "putting hot sauce" on the nipple. Only one said she was putting a tablet of Paracetamol "Panadol" on the nipple to stop the baby from breastfeeding.

**Theme (4) Female circumcision is a cultural belief and a local meaningful practice:**

Female circumcision appeared to be meaningful to village women. Fear that their daughters will not get married if they were not circumcised, men don't like or marry from uncircumcised girls in Sudan. When women were asked if they would do circumcision to their daughters and why? All women declared that "*It is the habits of our country and we must do it*". Most of the participants said that if they did not circumcise their daughters, they would not marry because men do not marry uncircumcised girls. Some of the participants correlated circumcision to religious reasons and others correlated it to chastity reasons.

#### **IV. Discussion**

Prenatal, natal and postnatal health behaviors are essential determinants of safe motherhood. The frequency and types of traditional practices may vary from one community to another (Nazik et al., 2015). However, the present mixed method sequential explanatory study design aimed to provide a detailed and reliable evidence base that relates to traditional cultural practices and health behaviors related to safe motherhood among women of reproductive age and identify factors leading to the use of these practices.

In the quantitative phase, the study showed the practices associated with pregnancy and puerperium in the urban areas. In the qualitative phase, four pivotal and common themes emerged from the data: cultural barriers to accessing maternal health care, traditional practices related to nutrition during pregnancy and puerperium, practices related to mother and her child during post-partum period, and female circumcision as a cultural belief and local meaningful practice.

Adequate antenatal care is important to reduce risk of mothers, fetus, and it is an essential determinant of safe motherhood. The findings of the current both quantitative and qualitative study indicated that utilization of antenatal care among participants was limited; the underutilization of these services is related to many cultural factors in the community.

The majority of participants in qualitative phase believed pregnancy is normal and there was no need for medical checkups. They also accepted all health problems during pregnancy because they believed that it was God's will. Such beliefs contributed to the underutilization of essential antenatal care. Moreover, previous studies conducted in Eastern Sudan reported similar reasons for underutilization of antenatal care (Furuta & Mori, 2008; Ali et al., 2010.).

The findings of current study (both quantitative and qualitative) indicated that the majority of women stated that they used traditional practices during pregnancy and postpartum period. The greatest part used fire pit and black henna. Fire pit and henna are very popular and have been widely used in Sudan; they are part of the culture and traditions in rural Sudan. Married women of all ages use henna for skin decoration, and it is considered an essential part of social celebrations.

In the literature little is mentioned about the usage and safety of fire pit during pregnancy and post partum. As well, no information is available on the effects of black henna on human reproductive health.

The danger zone is black henna, which actually contains a substance called para-Phenylenediamine (PPD). According to the Scientific Committee on Consumer Products, PPD which presents in black henna, it causes an allergic and a very strong potential skin sensitizer. Accordingly, the European Standard Series for diagnostic patch testing for eczema patients, it emphasized that PPD can have adverse reaction upon re-exposure. In addition, literature reported that henna cause hemolytic crisis in Glucose-6-phosphate dehydrogenase deficiency (G6PD) infants and others (de Groot, 2013).

In the current quantitative phase more than two third of women used local herbal fluid to cure their women sickness (i.e., nausea & vomiting), the present study finding is higher compared to what has been reported by Amasha and Jarrah, (2012) in a study conducted in Jordan, it was higher.

Concerning nutritional taboos, a large group of the studied women during post partum period refrained to eat certain types of food (beef, onion, garlic, fats and chili), and a considerable group of women reported that the reason for not eating certain foods was related to social norms and taboos in their community. The present study result is congruent with similar most recent studies in Sudan (Tahir et al., 2018) and in Northern Tanzania (Lennox et al., 2017) which found that the majority of pregnant women desisted from eating certain foods due to community traditions.

Myanmar women's culture considered food such as duck, vegetables, sea food like others as not good



during postpartum period. Indian women consume hot foods such as soups, hot food, drinks with spices and herbs, while, Vietnamese culture forbade women in postpartum period from eating or drinking cold meals or drinks (Naser et al., 2012; Hoang & Le, 2013; Sein, 2013). Some traditional birth practices may have negative effects; it could be associated with increased risk of perinatal and post natal mortality and morbidity.

With regard to the opinion of participants towards the place of delivery, the current study showed that the majority of women prefer home birth in a traditional way in hands "daya". Number of women mentioned that *"the hospital is overcrowded and they don't want their babies to be affected by people is evil-eye"*; some women chose home birth because they felt more relaxed in a familiar surrounding. These findings were supported by those of other studies on women's decisions to have home delivery (Dietsch & Mulimbalimba-Masururu, 2011; Serizawa et al., 2014).

Considering postpartum traditional practices related to sexual precautions, most participants avoided having marital relationship for six months or more after birth. They mentioned that practicing sex relationship with spouse earlier would negatively affects babies' lactation. The present study finding is congruent with that of the study done on Vietnamese women, where all women not having sexual intercourse after childbirth for three to four months (Lundberg & Trieu, 2011).

In addition, all studied women in the current qualitative study preferred practicing Reinfibulation (RI) after vaginal delivery and believed that the main motive for this practice is the sexual satisfaction of their husband. They are very limited studies on RI, but the current findings were consistent with previous researches (Berggren et al., 2006; Serizawa et al., 2014).

Female genital mutilation/cutting (FGM/C) is one of pillars to safe motherhood and has attracted much attention in Sudan, custom and tradition are the most common reasons for FGM/C, especially in rural communities (Serizawa et al., 2014). The current study findings revealed that, all females enrolled in the current qualitative study are circumcised and had FGM/C performed on their daughters; in the quantitative phase, the vast majority of participants had been circumcised, it is evident that the main reasons for performing circumcision of daughters as reported by women in two phases namely social pressure and traditional habits.

Meanwhile, most of women in the present study had wrong believes that FGM is mandated by religion and this is reinforced by traditional beliefs (i.e. Chastity, uncircumcised girl not is suited to marriage). The present study findings are congruent with the study done among village women in Eastern Sudan, where all of participants were found to be circumcised (Serizawa et al., 2014). It is also close to many other previous studies as those of Berggren et al., (2006) and Satti et al., (2006) which declared that, the rate of FGM is high among Sudanese women.

Regarding neonatal mortality rate in Sudan, a survey carried out in 2010 identified that, there were 189 neonatal deaths out of 6,198 live births (3.0%). In the multiple logistic regressions, the factors associated with neonatal mortality were poor household and delivery complications (Bashir et al., 2013).

According to health implications associated with breast feeding and weaning, using interview, a qualitative study asked 13 women about their personal experience in their last lactation. All women asserted that the duration of breast feeding is two to three years; women would stop breast feeding if the child suffers from diarrhea and believed that breast milk increase diarrhea in children. In the current study women reported that for weaning children from breast feeding, they use hot sauce or Panadol tablets on the nipple. These findings may reflect the lack of appropriate knowledge regarding breast feeding. From researchers' point of view, women in rural Sudan prefer home deliveries. This could be barrier to receiving quality of postpartum care including lack of health education about many topics related to postpartum care for mothers and babies as well.

## **V. Conclusion and Recommendations**

This mixed methodology study indicated that most of studied women used traditional practices during pregnancy and postpartum period. These findings suggested that further efforts should be made to increase community awareness of traditional practices that put women and children at increased risk of health problems. Health education program regarding traditional practices are recommended to ensure safe motherhood among Sudanese women. Future research studies should concentrate on multiple variables that could affect safe motherhood, try to change community related wrong traditions to healthy ones.

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