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ASSESSMENT OF KNOWLEDGE AND PRACTICE TOWARDS BIRTH PREPAREDNESS AND COMPLICATION READINESS AMONG WOMEN IN MEKELLE, NORTHERN ETHIOPIA: DESCRIPTIVE CROSSECTIONAL

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ABSTRACT: Background: Birth preparedness and complication readiness (BP/CR) are interventions designed to address the delays by encouraging pregnant women, their families, and communities to effectively plan for births and prepare for emergencies. **Objective:** To assess the knowledge and practice towards birth preparedness and complication readiness among women in Mekelle town, 2013. **Methods and Materials:** A community based cross sectional study was conducted in 2013 on a sample of 220 women. Data were collected using pre-tested and structured questionnaire. The collected data were analyzed by SPSS for windows version 16.0 and result of the study is presented using texts, tables and graphs. **Result:** Out of 220 total participants, 145 (66%) mention at least one key danger sign during pregnancy and 42 (19%) mention at least two pregnancy danger signs. Sixty eight (44%), 46 (30%), 22 (14.3%), 17 (11%) of the respondents have been practiced or currently practicing in preparing identify birth place and assistance, items needed for safe delivery, transportation plan, and saving money as an element of BP/CR, respectively. Seventy four percent of the respondents got/ getting encouraging factors on their BP/CR practice whereas 14% had faced/ facing obstacles on their BP/CR practice.

INTRODUCTION: Birth Preparedness and Complication Readiness (BP/CR) is an integral component of focused antenatal care which involves planning for normal birth and anticipating the actions needed in case of an emergency. It is also a strategy to promote utilization of skilled maternal and neonatal care timely, based on the theory that preparing for child birth and being ready for complications reduces delays in obtaining this care ^{1,2}.

Birth Preparedness (BP) includes selecting a birth location, identifying a skilled provider and making the necessary plans to receive skilled care for normal births, and preparing for rapid action in the event of an obstetric emergency. An emergency plan should include identifying the nearest functional 24 h emergency obstetric care facility, means of transportation in emergency, suitable blood donors, source of emergency funds, designation of a person to make decisions on the woman's behalf and a person to care for her family while she is away ^{1,3}.

Birth and emergency preparedness is considered by WHO and other agencies to be a useful and practical intervention with several advantages ⁴. In particular, it can contribute to increased use of services by assisting women and their families to

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plan for the necessary support, clothing and equipment for the birth, *etc.*, and by making women and their partners/families aware of the potential for unexpected events ⁵. However, in many societies in the world, cultural beliefs and lack of awareness inhibit preparation in advance for delivery and expected baby. Failure to plan in advance for a normal birth, and in adequate preparation for urgent action in event of obstetric complications, are well documented factors contributing to delays in receiving skilled obstetric care and consequently contribute to maternal and neonatal mortality ⁶.

Many pregnant women are unable to recognize the danger signs of obstetric complications. When complications occur, the unprepared woman, her spouse and/or family waste time in recognizing the problem, making the decision to seek emergency obstetric care, getting organized, getting money, finding transport and reaching the appropriate referral facility. Women and newborns need timely access to skilled care during pregnancy, childbirth, and the postpartum/newborn period.

Too often, however, their access to care is impeded by delays in deciding to seek care, delays in reaching care, and delays in receiving care. These delays have many causes, including logistical and financial concerns, unsupportive policies, and gaps in services, as well as inadequate community and family awareness and knowledge about maternal and newborn health issues. The causes of these delays are common and predictable ⁷. Responsibility for BP/CR must be shared among all safe motherhood stake holders, policymakers, facility managers, providers, communities, families, and women because a coordinated effort is needed to reduce the delays that contribute to maternal and newborn deaths ¹.

Hence, BP/CR are interventions designed to address the delays by encouraging pregnant women, their families, and communities to effectively plan for births and prepare for emergencies if they occur ⁸. It is assumed that most cases of maternal death and severe acute maternal morbidity can be prevented when births are assisted by skilled birth attendants. Safe Motherhood programs are successful in reducing maternal mortality by placing skilled birth attendants within

functioning health systems, which include the availability of or referral to emergency obstetric care services ^{9,10}.

Every year, worldwide, approximately 8 million women suffer from pregnancy-related complications and over half a million die. Majority of these deaths could be prevented through proven, effective, and affordable actions ¹¹. Poor maternal health, leading to maternal death and severe acute maternal morbidity, remains a major problem, especially in sub-Saharan Africa where the maternal mortality ratio (MMR) is declining steadily, where one of every 16 women dies of pregnancy related causes during her lifetime, compared with only 1 in 2,800 women in developed regions ¹².

Thus, most maternal deaths result not from 'disease' per se, but from pregnancy-related complications, which are now widely recognized as a leading cause of death and disability among women of reproductive age in developing countries. The common causes of maternal deaths are hemorrhage, postpartum infection, hypertensive disorders, obstructed labor and abortion complications. These life-threatening complications are treatable thus most of these deaths are avoidable if women with the complications have timely access to appropriate emergency obstetric care ¹³.

Despite the great potential of Birth Preparedness and Complication Readiness in reducing the maternal and newborn deaths, its status is not well known in most of sub-Saharan Africa. Therefore, this study assessed the knowledge and practices of pregnant women with respect to BP/CR among women who were pregnant in the last 24 months in Mekelle city.

The outcome of our study will help to provide baseline information on BP/CR among pregnant women to protect from pregnancy related health risks and help the responsible bodies and policy makers to design appropriate strategies.

Hence, the aim of the study is aimed at assessing the knowledge and practice towards birth preparedness and complication readiness among pregnant women in Mekelle town.

METHODS AND MATERIALS:

Study Design, Area and Study Population:

Community based descriptive cross-sectional study design was employed using quantitative research method in Mekelle town, Hawelti subcity from June to December 2013 among women who gave birth in the last 24 months prior to the study period. Mekelle is the capital city of Tigray National Regional State which is located 783 km North of Addis Ababa. Mekelle covers 28 km square and has an estimated population of 264,507 and of all the populations of 134,899 are Males 129,608 are Females.

Mekelle has 7 sub cities (“Kifleketema”), 108 “ketena” and 60,206 households and there are four Hospitals, eight Health Centers and 46 Urban Health Extension Workers (UHEW) making the health service coverage 56%. This study was conducted in Hawelti sub city, which has a total population of 59,634 with 30,413 males and 29,221 females.

In the study all women who were pregnant in the last 24 months including the data collection period were included in the study where as women who were critically ill during the data collection period were excluded from the study.

Sample Size Determination: The sample size of the study was calculated using the formula for estimation of single population proportion by the assumption of: $p = 15.4\%$ from proportion of pregnant women who mentioned at least one danger sign from a study conducted in Adigrat town, Northern Ethiopia (14). With an assumption of margin error 0.05 at 95% confidence level and 5% non-response rate, the sample size was 220.

Sampling Procedure: Multistage sampling procedure was used to select study subjects. All the sub cities in the town were listed and one was selected using simple random sampling technique (lottery method) which was Hawelti sub city. All the five Kebelles which are found in the sub city were included in the study.

From the selected Kebelles the households were selected randomly from all the 5 Kebelles according to their population proportion. Accordingly, a total of 220 households were

selected for the actual study. From each house hold only one eligible mother were selected. In cases where more than one candidate was possible in the same household, lottery method was used to select one.

Data Collection Instruments and Quality

Measures: The questionnaire that was prepared in English was translated equivalently to the local (Tigrigna) language and then back to English language by expert of that language to keep consistency and to make easily understood by the data collectors and interviewees.

Besides, Pre-test of the data collection instrument was done on 5% of the sample size in Ayder sub city with similar characteristics of the study unit that was not to be included in the main study before the actual data collection. Collected data was checked for its completeness and clarity on daily basis and correction was made accordingly.

Data Processing and Analysis: The collected data were coded, entered, and cleaned, and analyzed by using SPSS for windows version 16.0. Ethical clearance was obtained from Mekelle University, College of Health Sciences. Permission to carry out the study was obtained from the local Health Bureau. Individual informed verbal consent was obtained from each respondent after explaining the objective and procedures of the study. All responses were kept confidential.

RESULT:

Socio Demographic Characteristics: In this study, a total of 220 women of reproductive age from Hawelti sub city were interviewed, yielding a non-response rate of 0.5%. About 58% of the respondents were between the ages of 25 and 34 years.

Most of the respondents (83.2%) were Orthodox, and the rest were (12.7%) Muslim, (2.2%) protestant and (1.8%) Catholic religion followers. Majority of the respondents were Tigray by ethnicity (95%), and 88% of the women were married. Forty four percent of the study population had attended formal education completed 1-8 grades. Half of our respondents (51%) were housewives and 99 (45%) of the respondents were with a family size of 4-6 **Table 1.**

TABLE 1: FREQUENCY AND PERCENTAGE DISTRIBUTION OF SOCIO DEMOGRAPHIC CHARACTERISTICS OF WOMEN WHO WERE PREGNANT IN THE LAST 24 MONTHS, MEKELLE, 2013

Characteristics		Frequency(=n)	Percent (%)
Age	15-24	52	24
	25-34	128	58
	35-49	40	18
Religion	Catholic	4	1.8
	Muslim	28	12.7
	Orthodox	183	83.2
	Protestant	5	2.27
Ethnicity	Amhara	7	3.2
	Oromo	4	1.8
	Tigray	209	95
Marital status	Single	14	6.3
	Married	194	88
	Divorced	10	4.54
	Widowed	2	0.9
Educational status	Unable to read & write	26	11.8
	Grade 1-8	96	44
	Grade9-12	56	25.4
	College & above	42	19
Occupation	House wife	112	51
	Government employee	58	26.3
	Merchant	48	21.8
	Farmer	2	1
Family size	1-3	87	39.6
	4-6	99	45
	=>7	34	15.4
Income	<500	42	19
	500-1500	81	36.8
	>1500	97	44

Reproductive Characteristics: The age of first marriage for majority of the respondents (84.5%) ranges 14-24 years. One hundred seventy four (79%) women had history and plan of family

planning and of them 126 (72%) used injectable contraceptive, 23 (13.2%) Implanon, 22 (12.6%) pills, and 3 (1.7%) IUCD **Table 2.**

TABLE 2: FREQUENCY AND PERCENTAGE DISTRIBUTION OF SOME REPRODUCTIVE HEALTH CHARACTERISTICS OF WOMEN WHO WERE PREGNANT IN THE LAST 24 MONTHS, MEKELLE, 2013

RH characteristics		Frequency(=n)	Percent (%)
Age at 1 st marriage	<14	7	3
	14-24	186	84.6
	>24	27	12.2
Age at 1 st delivery	14-24	141	70
	25-34	60	30
	35-44	0	
Gravidity	1-3	158	71.8
	4-6	62	28.1
	>6	0	
Parity	0-2	139	63.1
	3-4	69	31.1
	>6	12	5.4
Family planning	Pills	22	12.6
	Injectable	126	72.4
	Implanon	23	13.2
	IUCD	3	1.7

Knowledge of BP/CR during Pregnancy: One hundred sixty five (75%) of our respondents have heard about BP/CR before, of them 120 (72.7%), 30 (18%), and 15 (9%) heard from health professional, Mass media and family member respectively. Of our respondents, 61 (39%), 49 (31.4%), 35 (22.4%), and 11 (7%) mention birth place & assistance plan, arranging materials necessary for safe delivery, identify pregnancy danger signs, and potential blood donor as elements of BP/CR, respectively.

A total of 156 (71%) know at least one element of BP/CR and 58 (26.3%) mention at least two elements of BP/CR.

Knowledge of Danger Signs during Pregnancy: Majority (66%) of the respondents mention at least one key danger sign during pregnancy and 42 (19%) mention at least two pregnancy danger sign **Fig. 1**. Out of 145 respondents 109 (75%), 21 (14.5%), 9 (6.2%), 6 (4.1%) spontaneously mention vaginal bleeding, absence of fetal movement,

convulsion and others (blurred vision & edema) as pregnancy danger sign, respectively.

Knowledge of Danger Signs during Labor and Delivery: Eighty seven (59%), 32 (21.8%), 26 (17.7%), and 2 (1.4%) specify excessive vaginal bleeding, retained placenta, prolonged labor, and convulsion as labor & delivery danger sign, respectively. One hundred forty seven (66.8%) of the respondents mentioned at least one key danger sign, and 34 (15.4%) mentioned at least two danger sign **Fig. 1**.

Knowledge of Danger Signs during Postpartum: Fifty two (43.7%), 36 (30.2%), 29 (24.4%), and 2 (1.7%) of the respondents mentioned sever vaginal bleeding, offensive vaginal discharge, high fever, and convulsion as postpartum danger sign, respectively. One hundred nineteen (54%) of the respondents mentioned at least one key danger sign, and 57 (26%) mentioned at least two danger signs **Fig. 1**.

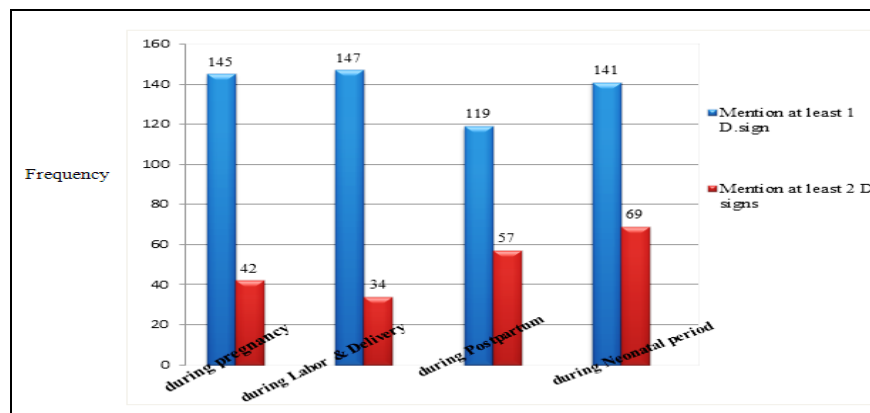


FIG. 1: FREQUENCY AND PERCENTAGE DISTRIBUTION OF DANGER SIGN KNOWLEDGE DURING PREGNANCY, LABOR AND DELIVERY, POSTPARTUM AND NEONATAL PERIOD OF WOMEN WHO WERE PREGNANT IN THE LAST 24 MONTHS, MEKELLE, 2013

Experience of Respondents Related to the Pregnancy, Delivery and Postpartum Period: The majority 195 (88.6%) of the respondents have attended antenatal care (ANC) at least once in their pregnancy time. Of 195, about 118 (60.5%) respondents started their follow up while their pregnancy was before 16 weeks. About 51.8 % of the total respondents had 4 or more visits **Fig. 2**. One hundred ninety (97.4%) of those who had ANC follow up screened for STI including HIV/AIDS, and of the total 189 (97%) were counseled for BP/CR during their ANC visit. One hundred ninety five (88.6%) women gave birth and

plan to give birth in health institutions whereas 11.4% delivered at home.

Out of 195, 63%, 31.8%, 5% transported or plan to the health institution by Ambulance, Taxi and on foot, respectively. One hundred ninety five (88.6%) of our respondents were assisted and plan to be assisted by trained birth attendant whereas, 17 (7.8%), 8 (3.6%) were assisted by family members and by traditional birth attendant, respectively. Out of 201, 147 (73%), 47 (23.4%), 7 (3.4%) persisted their labor for <12 hours, 12-24 hours, and >24 hours, respectively.

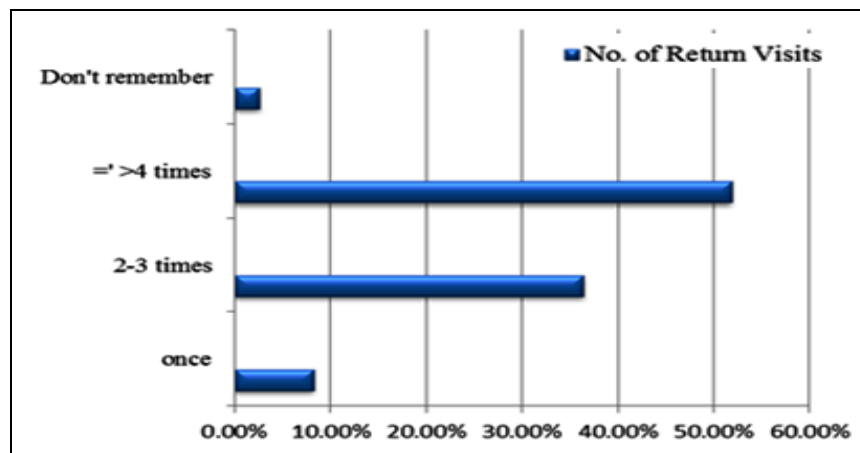


FIG. 2: PERCENTAGE DISTRIBUTION OF NUMBER OF RETURN VISITS DURING THEIR ANC FOLLOW UP OF WOMEN WHO WERE PREGNANT IN THE LAST 24 MONTHS, MEKELLE, 2013

Practice of Respondents Regarding BP/CR:

Sixty eight (44%), 46 (30%), 22 (14.3%), 17 (11%) of the respondents have been practiced or currently practicing in birth preparedness, like identifying birth place & assistance, preparing items needed for

safe delivery, transportation plan, and saving money as an component of BP/CR, respectively. Of the respondents 153 (69.5%) practicing at least one element of BP/CR, and 71 (32.3%) practicing at least two elements of BP/CR **Fig. 3.**

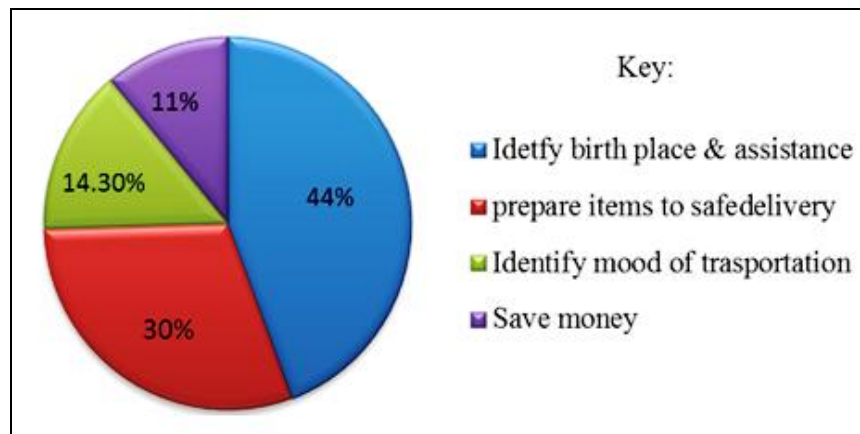


FIG. 3: PERCENTAGE DISTRIBUTION OF COMPONENTS OF BP/CR PRACTICE OF WOMEN WHO WERE PREGNANT IN THE LAST 24 MONTHS, MEKELLE, 2013

Obstacles & Encouraging Factors of BP/CR Practice:

Fourteen percent of the total reported that as they have been faced/ are facing obstacles during their BP/CR practice. Of the total 17 (7.7%), 11 (5%), (6 (2.7%), spontaneously mention that lack of money, lack of family support and lack of transportation access were their leading obstacles, respectively. On the other hand, 162 (74%) of the respondents had encouraging factors during their BP/CR practice. Sixty three (28.6%), 58 (26.3%), 26 (11.8%), and 15 (6.8%) of our respondents mention that as Health care provider support, family support, health institution nearness and having enough income were their encouraging factors, respectively. In addition to this, 193 (87.7%) our respondents or 99.5% of the married

women got support by their partner in their BP/CR practice.

DISCUSSION: Birth preparedness and complication readiness (BP/CR) is the process of planning for normal birth and anticipating the actions needed in case of an emergency¹⁵. In this study, an attempt has been made to assess knowledge and practice of BP/CR in Hawelti sub city, Mekelle.

According to our study, 80% of our respondents knew at least one of the elements of BP/CR. The study showed that 53.6% of our respondents had first ANC visit by a skilled provider before their 16 weeks of pregnancy.

This is higher compared to Ethiopian Demographic and Health Survey (EDHS) report which was 31% for women residing in urban areas¹⁶. It is also higher compared to a study conducted in Adigrat which was 21.2%¹⁴. This may be due to our study population is small and due to its proximity to health institutions as the study area is found in the capital of the region. In this study, 101 (45.9%) of the respondents had four or more visits. This is similar to the report of EDHS for women residing in urban area which was found to be 45.5%¹⁶.

An important aspect of assessing birth preparedness and its complication readiness is measuring spontaneous knowledge of essential danger signs of obstetric and newborn complications. Knowledge of the danger signs of obstetric complications is the first step in the appropriate and timely referral for essential obstetric care¹⁷. One hundred forty five (66%) of our respondents mention at least one pregnancy danger sign which is very high compared to other study conducted in Adigrat (15.4%), Uganda (52%) and India (7.2%)^{14, 18, 19}.

These differences might be due to our study is latest, as a result of increment of health institutions availability and education, and counseling on BP/CR given during their ANC visit. However, when it is compared with other studies conducted elsewhere¹⁷ the knowledge of danger sign was found to be much lower than in this study and in general in this region. This variation might be due to socio-cultural difference and difference in implementation of relevant health intervention programs.

The study also showed that 147 (66.8%) of the respondents mentioned at least one key danger sign during labor and delivery which is lower than other studies conducted in Uganda¹⁸. However, it was found much higher than a study conducted in India¹⁹. The study also revealed that, 119 (54%) the respondents reported that they knew at least one danger sign during postpartum period. This is lower than the study conducted in Uganda¹⁸.

These differences could be due to the health settings, cultural and socioeconomic differences among the countries. The most frequently mentioned danger sign during labor & delivery was severe vaginal bleeding (59%) followed by retained

placenta (21.8%) and prolonged labor (17.7%) while excessive vaginal bleeding (43.7%), Offensive vaginal discharge (30.2%) and fever (24.4%) were the most frequently mentioned postpartum danger signs. This is lower than the study conducted in Nigeria for prolonged labor which was (20.5%), but higher for vaginal bleeding (12.7%)¹⁵.

Similarly, it is also higher than the study conducted in Adigrat¹⁴ and was found to be 16.5%, 11%, and 7.1%, of the respondents spontaneously mentioned severe vaginal bleeding, prolonged labor, and retained placenta as danger signs during labor and childbirth, respectively and (16.7%), (1.1%) and (1.5%) of the respondents spontaneously mentioned severe vaginal bleeding, high fever, and foul smelling vaginal discharge as danger signs during postpartum period, respectively.

Birth preparedness is a strategy to promote the timely use of skilled maternal care, especially during childbirth, based on the theory that preparing for childbirth reduces delays in obtaining this care. A birth plan/emergency preparedness plan includes identification of the following elements: identifying a skilled birth attendant; identifying the location of the closest appropriate care facility; funds for birth related and emergency expenses; transport to a health facility for the birth and obstetric emergency; and identification of compatible blood donors in case of emergency²⁰.

In this study, 153 (66.8%) respondents reported that as they made and are practicing some arrangements and mentioned at least one element of BP/CR. Of these, 68(44%), 46 (30%), 22 (14.3%) and 17 (11%) of the respondents have been practiced or currently practicing in preparing identify birth place and assistance, items needed for safe delivery, transportation plan, and saving money as an element of BP/CR, respectively. This is more or less similar with the study conducted in Adigrat¹⁴. Majority of our respondents (74%) got encouraging factors for their BP/CR practice. Sixty three (28.3%), 58 (26.3%), 26 (1.8%), and 15 (6.8%) of the total specified that as health care provider support, family support, health institution nearness, and having enough income are their encouraging factors during their BP/CR practice, respectively.

On the other side, fourteen percent of the total complaining of obstacles, of these 17 (7.7%), 11 (5%), and 6 (2.7%) spontaneously mentioned that as lack of adequate income, lack of family support, and lack of transportation access are their leading obstacles during their BP/CR practice. These factors are similar to other studies in general as they are universal barriers.

CONCLUSION AND RECOMMENDATION:

In this study it was found that most of the respondents had ANC follow up at least once. However, those who can mention at least two components of BP/CR accurately were relatively low. Though the awareness of the concept of BP/CR was high, recognition of key danger signs in pregnancy was poor. Hence, effort to increase birth preparedness and complication readiness should focus not only on frequency of antenatal care but also in the contents of health education given during ANC follow ups. Besides, Federal Ministry of Health (FMOH), Regional Health Bureau, Zonal Health Department as well as other partner organizations that are working in areas of maternal health should come up with strategies to improve birth preparedness at individual and community level.

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CONFLICT OF INTEREST: Nil

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