Attitude of Pregnant Women towards the Effect of Oil Spillage on Pregnancy Outcomes in Gokana, Rivers State

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Abstract
This study examined the attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State. The study adopted a community-based cross-sectional design. The population of the study comprised 384 pregnant women living in Mogho and Bodo communities of Gokana out of which 197 were selected using simple random sampling technique with 192 valid for data analysis. A self-structured questionnaire designed on the modified 4-point likert scale format was used for data collection with a reliability index of 0.85. Data was analysed using descriptive statistics of frequencies, percentages, mean, standard deviation and inferential statistics of chi-square. Results revealed that out of the 192 respondents studied, 152(79.2%) had negative attitude while 40(20.8%) had positive attitude towards oil spillage effects on pregnancy outcomes; the factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes include type of accommodation/community, occupation, culture, age, awareness/knowledge of pregnant women regarding oil spillage effects on pregnancy outcomes, educational attainment, level of poverty and personal beliefs/perceptions. The study concluded that majority of pregnant women had negative attitude towards oil spillage effects on pregnancy outcomes. The need for behavioural intervention to enhance the attitude of pregnant women towards oil spillage effects on pregnancy outcomes was recommended.

Keywords: *Oil spillage, Pregnancy outcome, Attitude, Effect.*

Introduction

The problem of the oil spill has been a pressing issue to the surrounding civilization, the community and the nation at large, with the discovery of crude oil. Despite all the riches associated with the sales and the exportation of oil, the oil spill remains a major problem to the society leading to strife amongst inhabitants of oil-rich states and the government. Oil spills simply refer to the discharge of crude oil petroleum) in the form of liquid from drilling rigs, oil wells, bunkers, oil tankers, and other by-products of petroleum refining into the environment (United Nations Environment Programme, 2011). Oil spills are mainly caused by human activities in areas where crude oil is in abundance for mining. Oil spills has been a subject of widespread criticism amidst media attention, series of political strife and acrimony to engage the government in discussing and deciding what action can best be employed to prevent it from occurring in the future (Wout, 2015).

Several epidemiological studies have shown adverse effects of parental exposure to hydrocarbons before or after conception on fetal development, pregnancy outcomes and child health. Studies conducted by Bruederle and Hodler (2017) and Webb et al (2014) found that higher air-borne releases of toluene, a hydrocarbon, lead to shorter gestation, higher incidence of low birth weight, and increased infant mortality. The United Nations Development Programme estimates that 6178 oil spills occurred in Ogoniland between 1976 and 2011,

resulting in discharges of approximately three million barrels of oil (United Nations Development Programme, 2016). Commissioned by the Federal Government of Nigeria, the United Nations Environmental Development Programme (UNEP) conducted an environmental assessment of Ogoniland and determined that widespread oil contamination presents serious threats to human health (United Nations Environmental Development Programme, 2011). Residents are exposed to petroleum hydrocarbons that are released to the environment by burning, spilling and leaking. According to Linden and Palsson (2013), exposure can occur via inhalation of hydrocarbons in ambient air and via consumption of and dermal contact with hydrocarbons in water, soil and sediment. Fetal and child health may be affected through exposure of parents before conception, through exposure of the mother during pregnancy, and through exposure of the child after birth (Bruederle and Hodler, 2017; D'Andrea and Reddy, 2014; Currie and Schmieder, 2009). While there is little evidence to reveal which forms of exposure to oil contamination are most harmful, and for which reasons, some strands of the epidemiological and clinical literature offer insights into the likely health impacts of oil spills and some possible biological mechanisms.

Oil spills simply refers to the discharge of crude oil in the form of liquid from drilling rigs, oil wells, bunkers, oil tankers, and by-products of petroleum refining into the environment (United Nations Environment Programme, 2011). Oil spills can lead to irreversible environmental degradation and potentially pose hazards to human health, but scientific evidence on the knowledge and attitude of pregnant women towards oil spillage effects on pregnancy outcomes is lacking. Attitude is "a feeling or opinion about something or someone" (Cambridge online Dictionary, 2019). Thus, attitude towards the effect of oil spill can be conceptualized as the feeling of the people about its effect. This is very crucial because, their feeling can influence their behaviour towards guiding against practices that increases their level of exposure to it. According to Maze (2018), there are factors that can influence the attitude of a pregnant woman towards health and health seeking behaviours such as level of education, occupation, poverty, family, personal experience, religious/traditional beliefs, media, and poor access to health care facilities.

Given that oil spills occur with high frequency in the densely populated areas along pipelines in Nigeria, they are the cause of an alarming ongoing human tragedy. Studies have shown adverse effects of parental exposure to hydrocarbons before or after conception on fetal development, pregnancy outcomes and child health (Bruderle and Hodler, 2017). Others have perused the risk of spontaneous abortions among pregnant women exposed to petroleum products (Linden & Palsson, 2013; Currie et al, 2013); effect of exposure to air polluted by particulate matter which increases the risks of infant and child mortality, low birth weight, premature birth (Greenstone & Hanna, 2014; Tanaka, 2015), shorter gestation, and malformations (Rahman et al., 2016). However, studies highlighting the attitude of residents in oil rich areas towards the effect of oil spillage particularly on pregnancy outcome are scare. This study filled this gap by providing an empirical evidence on the attitude towards the effect of oil spillage among pregnant women in Gokana, Rivers State.

Research Questions

The study provided answers to the following questions:

1. What is the attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State?
2. What are the factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State?

Hypothesis

The following hypothesis postulated was tested at 0.05 alpha level:

i. There is no significant relationship between level of education and attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State.

Methodology

The methods and procedures used in this study are described below:

Study Design: This study adopted a community based cross sectional design. The cross-sectional design studies an attribute in a subset of a given population at a particular point in time. This study aimed at investigating the knowledge of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State Nigeria at the time of the study using a sample of the women.

Study Population: The population for this study were pregnant women living in Gokana Local Government Area of Rivers State. All pregnant women living in the study area for a period of one to three years were consented to participate in the study.

Sample and Sampling technique: The sample size for this study was 197 which was determined using Fisher's Formula: $n = z^2 pq/e^2$ where n = Sample size; z = confidence level taken as 95% = 1.96; p = proportion of the population with desired characteristics which was taken as 50% since the effect is unknown; q = proportion of the population without the desired characteristics = I – p; and e^2 = Degree of precision taken as 5% (0.05). Since the desired population size is < 1000, relationship nr = n/1+(n/N) was used making the 197. A simple random sampling technique was used to select the respondents for the study.

Instrument for Data Collection: A semi-structured questionnaire which was drafted by the researcher was used for data collection. The questionnaire was developed from information available in the literature on effects of oil spillage on pregnancy outcomes. The questions were rated on a four point Likert Scale ranging from strongly agree, agree, disagree, and strongly disagree. Section A was focused on the socio-demographic characteristics of the respondents, Section B on attitude of pregnant women towards oil spillage effects on pregnancy outcomes and Section C on factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes.

Validity of the Instrument: Two steps was taken to ensure validity of the questionnaire. Firstly, the questionnaire was drafted based on relevant information from the literature review, study objectives and two other experts in the field from nursing department examined the questionnaire. Secondly, the questionnaire was presented to the supervisor for corrections and approval. Suggestions made were incorporated to draft the final copy of the questionnaire. Thus, making the instrument for data collection valid one.

Reliability of the Instrument: To ascertain the reliability of the instrument, a test-retest procedure was used. The validated questionnaires were administered to 10 respondents in another community for pretesting twice within a week interval. This was to sample their answers to ensure that they understood the questions and the instrument is reliable and measures what it was supposed to measure. The answers were collected and analysed using Cronbach's alpha coefficient with a reliability index of 0.84.

Data Collection Procedure: A letter of introduction and Ethical approval was collected from the Programme Coordinator and the Ethical Committee of the University of Port Harcourt respectively. These letters with a letter of application to collect data from pregnant women from the two communities were submitted to the Chairmen of Community Development Committee of Mogho and Bodo communities. The members of the community development committee were briefed on the project and benefits of the project to the pregnant women and the communities. They were requested to sound-out a call to all pregnant women in the communities to come out in mass to the community town hall on the agreed date to fill the

questionnaire. Letters were dispatched to different churches within the communities to invite their pregnant women to participate in the study. The researcher and three research assistants visited the study sites before the research date and early on the days of data collection to introduce themselves and sought the consent of the pregnant women to participate in the study. Questionnaires were administered to the pregnant women and the content of the questionnaire was explained to the respondents in the language they understood to enable them respond appropriately. Out of the one hundred and ninety-seven (197) questionnaires that were administered, one hundred and ninety-two (192) was retrieved.

Data Analysis: Completed questionnaires were collected, coded and entered into the computer using the Statistical Package for Social Science (SPSS) version 24.0. Results were presented in frequencies and percentages. Inferential statistics of chi square was used to answer all the research hypotheses at 0.05 level of significance to ascertain the relationship between the independent and the dependent variables. Each objective was presented using tables.

Results: The results of the study are presented below in figures and tables:

Table 1: Attitude of Pregnant Women towards Oil Spillage Effects on Pregnancy Outcomes in Gokana, Rivers State (n=192)

S/N	Items	SA	A	D	SD	$\overline{X}$	Std Dev	Decision
1	Oil spillage has been a part of us and does not have negative effects on my child/children	76	98	10	8	3.26	0.74	Negative attitude
2	Oil spillage only affects those with low immunity	92	82	6	12	3.32	0.81	Negative attitude
3	Oil spillage affect children born into a poor home only	62	88	22	20	3.00	0.93	Negative attitude
4	Malnutrition is not related to oil spillage.	34	52	43	63	2.30	1.10	Negative attitude
5	Low birth weight in children is related to mothers' carelessness and not as a result of oil spillage	96	78	10	8	3.36	0.77	Negative attitude
6	Oil spills does not affect community's food	31	60	52	49	2.38	1.03	Negative attitude
7	God gives healthy children, oil spillage has no effect on them	84	66	19	23	3.10	1.00	Negative attitude
8	Children living around areas of oil spills, will survive	102	76	4	10	3.41	0.77	Negative attitude

Total score on the items=32, 1-15 (Negative attitude), 16-32 (Positive attitude)

Criterion mean: 2.50; 1.00-2.49 (Negative attitude), 2.50-4.00 (Positive attitude)

Table 1 shows attitude of Pregnant Women towards Oil Spillage Effects on Pregnancy Outcomes in Gokana, Rivers State. The result shows that out of the total score of 32 on the item, majority scored below the average indicating a negative attitude.

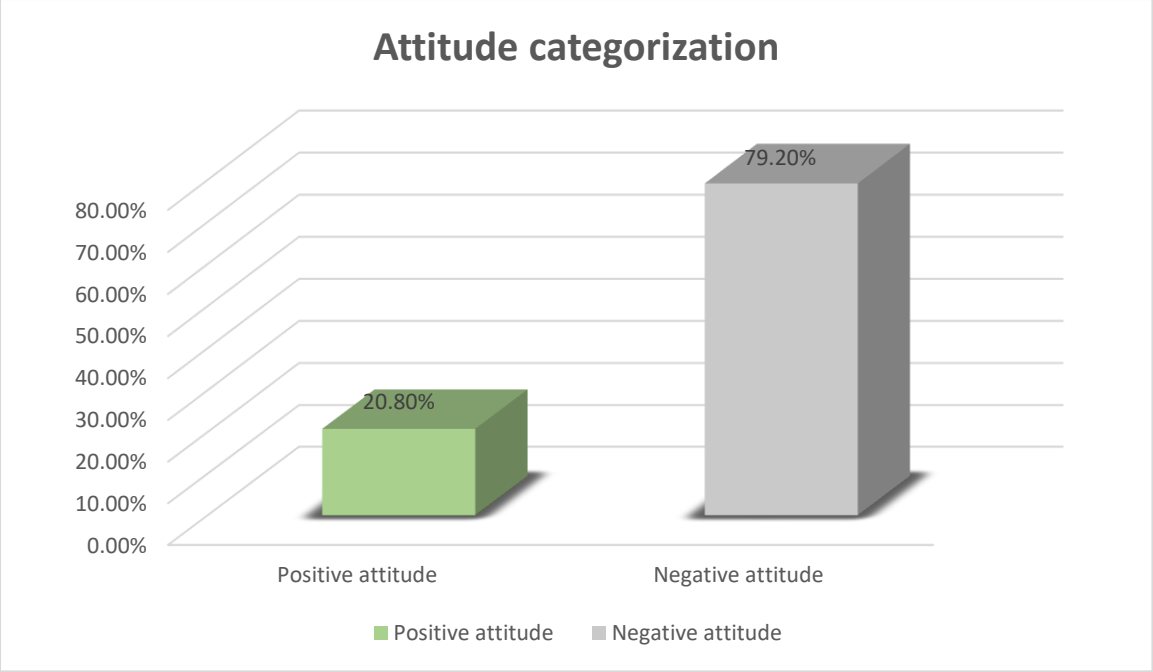

Fig 1: Bar chart showing the categorization of attitude of Pregnant Women towards Oil Spillage Effects on Pregnancy Outcomes

Fig 1 shows the pictorial presentation of the categorization of attitude of Pregnant Women towards Oil Spillage Effects on Pregnancy Outcomes in Gokana. The result shows that out of the 192 respondents studied, 152(79.2%) had negative attitude while 40(20.8%) had positive attitude towards oil spillage effects on pregnancy outcomes.

Table 2: Factors Influencing the Attitude of Pregnant Women towards Oil Spillage Effects on Pregnancy Outcomes in Gokana, Rivers State (n=192

S/N	Items	SA	A	D	SD	$\overline{X}$	Std Dev	Decision
1	Type of accommodation/community affects attitude of pregnant women towards oil spillage effects on pregnancy outcomes	74	66	20	32	2.95	1.07	Accepted
2	Type of job of pregnant women affects attitude towards oil spillage effects on pregnancy outcomes	86	72	18	16	3.19	0.92	Accepted
3	Culture of pregnant women affects the effects of oil spillage on pregnancy outcomes	81	88	15	8	3.26	0.77	Accepted
4	Attitude of pregnant women affects the effects of oil spills on pregnancy outcomes	10	28	70	84	1.81	0.87	Not Accepted
5	Awareness/ knowledge of pregnant women towards oil spillage effects on pregnancy outcomes affects attitude	94	72	10	16	3.27	0.90	Accepted
6	Education of pregnant women affects attitude towards oil spillage effects on pregnancy outcomes	81	90	12	9	3.26	0.78	Accepted
7	Level of poverty has a role to play on the attitude of pregnant women	79	66	22	25	3.03	1.03	Accepted
8	Attitude of family members affects the attitude of pregnant women towards the effects of oil spills on pregnancy outcomes	64	79	24	25	2.95	0.99	Accepted
9	Belief of pregnant women that congenital abnormalities are caused by the gods of the land, witches, enemies, e.t.c. affects attitude towards oil spillage effects on pregnancy outcomes	97	71	8	16	3.30	0.89	Accepted

Table 2 shows the factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State. Nine (9) items addressed research question four (4) out of which 8 were accepted with mean scores greater than 2.50. The mean scores of 2.95, 3.19, 3.26, 3.27, 3.26, 3.03, 2.95 and 3.30 for items 1,2,3,5,6,7,8 and 9 indicates that the factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes include the type of accommodation/community, occupation, culture of pregnant women, awareness/knowledge of pregnant women regarding oil spillage effects on pregnancy outcomes, educational attainment of pregnant women, level of poverty and personal beliefs/perceptions.

Table 3: Chi-square test showing Relationship between Level of Education and Attitude of Pregnant Women towards Oil Spillage Effects on Pregnancy Outcomes (n=192)

Variables	Attitude		Total	Df	P-value	X^2	Decision
Education	Positive	Negative		3	0.11	72.725	Significant
No formal	0	3	3				
Primary	2	9	11				
Secondary	21	101	122				
Tertiary	17	39	56				
Total	**40**	**152**	**192**				

P≤0.05 (Significant), P>0.05(Insignificant)

Table 3 revealed a p-value of 0.11 at Df=3 indicating that there is no statistically significant relationship between level of education and attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State Nigeria.

Discussion of Findings

The findings of the study are discussed below:

The study findings showed that a large number of pregnant women were negative in their attitudes towards oil spillage effects on pregnancy outcomes. By implication, most women believe that oil spillage is a normal event that has no negative consequences on pregnancy outcomes including overall maternal and child health. It also means that poor maternal and child health pregnancy related outcomes associated with oil spills could be attributed to other non-associated factors such as mothers' carelessness, malnutrition and spiritual undertones. The findings are in line with the submission of Aminaho (2018) that majority of the women perceived no negative consequences of oil and gas exploratory activities on maternal and child health. The results also agree with the assertion of Sebastian, Armstrong and Stephens (2012) that a large number of pregnant women are indifferent to the outcome of pregnancy in women living in the proximity of oil fields. The findings of a study conducted by D'Andrea and Reddy (2016) which showed that most women have negative attitude and misconceptions about the effect of crude oil spill exposure on pregnancy outcomes also substantiates the results of this study.

Results from the study revealed that the factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes include the type of accommodation/community, occupation, culture of pregnant women, awareness/knowledge of pregnant women regarding oil spillage effects on pregnancy outcomes, educational attainment of pregnant women, level of poverty and personal beliefs/perceptions. These results are in line with the submission of Aminaho (2018) that the perception and attitude of women on the effects of oil pollution on maternal and newborn outcomes is influenced by the cultural practices, norms and values of the communities. In some of the communities in the oil-polluted areas, their culture does not permit disclosure on issues or complications resulting from pregnancy. Therefore, it is very unlikely that these particular women would be unwilling to disclose their pregnancy-related issues. The results are also in consonance with the assertion of Sebastian et al. (2012) that the attitude of women towards the consequences of being in proximity with oil fields on pregnancy is negative. According to Stephens, this is associated with fright factors, culture, consequences of oil and gas exploration as perceived by the women, occupation and educational attainment of the women.

Results from the study showed that there was no statistically significant relationship between level of education and attitude of pregnant women towards oil spillage effects on pregnancy outcomes in Gokana, Rivers State Nigeria. This implies that the negative attitude of pregnant women towards oil spillage effects on pregnancy outcomes had nothing to do with educational attainment. The results agree with the submissions of D'Andrea and Reddy (2016) and Aminaho (2018) that socio-demographic characteristics of women does not significantly influence their knowledge and attitude towards the consequences of oil spill on maternal and child health outcomes.

Conclusion

This study on the attitude of pregnant women on effect of oil spillage on pregnancy outcome in Gokana, Rivers State Nigeria concludes that most pregnant women have positive attitudes towards oil spillage effects on pregnancy outcomes. The factors influencing the attitude of pregnant women towards oil spillage effects on pregnancy outcomes include the type of accommodation/community, occupation, culture of pregnant women, awareness/knowledge of pregnant women regarding oil spillage effects on pregnancy outcomes, educational attainment of pregnant women, level of poverty and personal beliefs/perceptions.

Recommendations

Based on the study findings, the following were recommended:

1. Health policy makers should integrate health education on environmental determinants of pregnancy outcomes into antenatal class sessions in maternity and related settings.
2. Midwives should provide mother and families with risk assessment counseling in relation to oil spillage effects on pregnancy as a way of reducing reproductive risks and improving pregnancy outcomes.
3. Government should maximize public health surveillance and related mechanisms to monitor areas of oil spillage that could affect pregnant and take measures to prevent adverse effects on pregnancy.

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