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Knowledge, Attitude and Prevention Practice of Rhesus Incompatibility among Women of Childbearing Age in Rumueme Community of Port Harcourt

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Abstract

Rhesus incompatibility is a condition that occurs during pregnancy if a woman has Rh negative blood and her baby has Rh positive blood. This study adopted a survey design with the aim of investigating the knowledge, attitude and prevention of Rhesus incompatibility among women of childbearing age in Rumueme community of Obio/Akpor Local Government Area of Rivers State. The study employed quantitative approach which allows for the data collected to be analysed numerically, make predictions, test causal relationships and generalize results to wider populations. This study was conducted on 87 pregnant women registered at Primary Health Centre Rumueme, Tombia Street, Port Harcourt, Obio/Akpor Local Government Area between the period of January, 2022 to June, 2023. Findings showed that pregnant women in the study area did not really see maternal-foetal blood incompatibility as a serious problem. Clearly the level of awareness is low and the low level of knowledge must have been responsible for negative attitudes. Therefore, interventions aimed at social and behaviour change should primarily target increasing knowledge, improving attitudes and addressing the gaps in practices highlighted by the study are recommended. It was concluded that more efforts should be made to make the incompatibility test even free to women attending clinics. Community healthcare service providers and churches should include in their services to counsel women on the importance of maternal-fetal blood incompatibility test. Women of childbearing age should check their status and those of their partners in terms of blood group, genotype and rhesus compatibility before engaging in relation for the purpose of procreation.

Keywords: attitude, incompatibility, knowledge, practice, rhesus factor.

1.0 Introduction

One major problem of our society in present days is the fact that people in the name of love get together either in marriage or friendship and start bearing children without checking up for blood group, rhesus factor and genotype compatibility. This is important because it plays an important role in childbearing and sometimes, child morbidity and mortality rate.

According to Abie (2021), rhesus incompatibility is defined as the production of maternal anti rhesus D antibodies in response to exposure to foetal rhesus antigen. It results in reticulocytosis in the bone marrow, erythroblast release from foetal liver, tissue hypoxia, increased umbilical artery and umbilical vein lactate level and hydrops fetalis. Hydrops fetalis is associated with a high mortality rate despite improved prenatal diagnostic and therapeutic interventions. Rhesus incompatibility could also be explained as a condition that occurs during pregnancy if a woman has Rh negative blood and her baby has Rh positive blood. According to WHO, deaths among children under five recorded 46% as new-borns in 2016 and much of high infant mortality is related to problems from pregnancy and early infancy such as maternal-fetal blood incompatibility (Kio et al, 2016). It was also observed that haemolytic disease of the new-born is a significant cause of fetal mortality and morbidity. According to WHO (2016) the incidence and complications due to rhesus incompatibility vary in different parts of the world and the low incidence of rhesus negativity often leads to the neglects of incompatibility. The reproductive risk of rhesus negative women in Africa is three times more than that of non-

African women which indicates that there's a problem that needs to be looked into (Ojo & Osuntosan, 2021, p 3).

Scholastic studies have shown that knowledge about blood groups and Rh Incompatibility and its complication during pregnancy and after child birth is very low despite the fact that it is cheap and easy to detect (Salem & Singer, 2018). In developing countries like Nigeria, this knowledge is considerably lower as it is a rare and under discussed topic. A lot of people are ignorant about the blood groups talk more of their rhesus factor. They are also unaware of the dangers that rhesus incompatibility can pose to mothers and their infants. According to the World Health Organization (2016) neonatal mortality is responsible for about 46% of deaths of children under 5 years and a large amount out of it is caused by problems like rhesus incompatibility and despite the fact that Rhesus immunoglobulin was introduced in 1968, haemolytic diseases of the new-born pose a serious concern and ignorance about it is higher due to inadequate educational programs.

For instance, blood group A, B, O and the Rhesus blood group systems are the most important clinically. The Rh system was described by Landsteiner and Weiner in 1940. Individuals with the Rh antigen on their red blood cells are referred to as Rh positive, whereas those without the antigen are Rh-negative. Unlike the ABO blood group system there is no preformed Rh antibody; only Rh-negative individuals are sensitized to produce the Rh antibody when they are transfused with Rh-positive blood. Rh incompatibility can pose a major problem in pregnancy when the mother is Rh-negative and foetus is Rh-positive. In the event of foeto-maternal transfusion, the mother becomes sensitized to the Rh antigen, and produces Rh antibodies that cross the placenta and cause agglutination and haemolysis of the foetal red blood cells. This disorder is referred to as haemolytic disease of the new-born (HDFN) or erythroblastosis foetalis. The index pregnancy in which the foeto-maternal haemorrhage occurred is usually spared from HDFN; however, there can be serious HDFN in subsequent Rh-positive pregnancies (Van-der et al, 2023).

The Rhesus incompatibility could pose a major problem in pregnancy, and it could be the cause of obstetric problem in a handful of women. Implementation of programs for antenatal and postnatal RhD (Rhesus D) immune globulin prophylaxis has led to a significant reduction in the frequency of maternal RhD all immunization and associated foetal and neonatal complications. According to WHO (2016) the incidence and complications due to rhesus incompatibility vary in different parts of the world and the low incidence of rhesus negativity often leads to the neglects of incompatibility. The reproductive risk of rhesus negative women in Africa is three times more than that of non-African women which indicates that there's a problem that needs to be looked into (WHO, 2016).

In Nigeria, so many young people go into relationship and marriages and start bearing children without necessarily going to check their rhesus compatibility. Consequently, the negative outcome on subsequent pregnancy is in some cases attributed to witches and wizards, evil uncles and in-laws, envious neighbours etc. Whereas all these could have been avoided if partners were diligent to check their rhesus compatibility and receive treatment when and in cases necessary. Hence, the knowledge, attitude and preventive measures by women of child-bearing age and or pregnant population attending the antenatal clinic of in Rumueme community need proper attention and intervention to prevent the prevalence of rhesus incompatibility. This is why this project aims at investigating the knowledge, attitude and prevention of rhesus incompatibility among women of childbearing age attending clinic in Rumueme community, Obio/Akpor Local Government Area of Rivers State.

2.0 Methodology

This study adopted a survey design with the aim of investigating the knowledge, attitude and prevention of Rhesus incompatibility among women of childbearing age attending health clinic in Rumueme community of Obio/Akpor Local Government Area of Rivers State. The study employed quantitative approach which allows for the data collected to be analysed numerically, make predictions, test causal relationships and generalize results to wider populations. This study was conducted on 87 pregnant women registered at Primary Health Centre Rumueme, Tombia Street, Port Harcourt, Obio/Akpor Local Government Area between the period of January, 2022 to June, 2023. The questionnaire was the main instrument for data collection; it was constructed by the researcher and submitted to the project supervisor and other experts for corrections and approval. The questionnaire is titled, Knowledge, Attitude and Prevention (KAP) of Rhesus incompatibility disease. The questionnaire has two (2) sections, section A, and section B. Section A contains socio-demographic data of the respondents while Section B deals with Knowledge, Attitude and Prevention (KAP) of the Rh incompatibility disease. This questionnaire was validated by the supervisor and other experts in the field of community health.

The instrument was administered to the respondents by the researcher in person, with the aim of explaining items that might not be clear to the respondents. Upon successful completion, the instruments were retrieved directly by the researcher for analyses. The responses from the respondents were organized into frequency distribution tables to determine the percentage response of the respondents.

3.1 Results and Discussion of Findings

Table 1 Knowledge of Rhesus Factor and Incompatibility

S/N	Item	Yes	No	Don't Know
1	Rhesus factor is associated with blood group. It is an antibody found on the red blood cells of most people	7 (8%)	0 (0%)	80 (92%)
2	Rhesus factor, blood group and genotype are one and the same thing for everybody.	20 (23%)	10 (11.5%)	57 (65%)
3	Rhesus incompatibility is a condition that occurs during pregnancy if a woman has Rh negative blood and her baby (foetus) has Rh positive blood. It could pose a major problem in pregnancy, and it could be the cause of obstetric failure in a handful of women.	20 (23%)	0 (0%)	67 (77%)
4	Rh incompatibility complications may not happen during a person's first pregnancy as the mother's blood may not mix with the foetus's blood until delivery. However, Rh incompatibility becomes a problem if one becomes pregnant a second time and have another Rh-positive foetus. In this case, the body will produce antibodies.	27 (31%)	20 (23%)	40 (46%)
5	These antibodies put the second foetus at risk for complications. Once the body realizes the foetus is Rh-positive, antibodies can pass into the foetus's blood and attack its red blood cells threatening the foetus' life.	30 (34.5%)	0 (0%)	57 (65.5%)
6	All pregnant women must register with government approved healthcare centres for antenatal and postnatal care and keep to the guidance of the care providers to avoid complications.	87 (100%)	0 (0%)	0 (0%)

The result of this project shows that most of the mothers are not knowledgeable about the concept of rhesus factor and incompatibility, especially those registered with Rumueme Primary Health Care Centre. Table 1 reveals that as high as 80 (92%) of the respondents are not aware thatrhesus factor is associated with blood group; and that it is an antibody found on the red blood cells of most people. Just about 7 (8%) are aware. This shows poor level of awareness among the respondents. Also, (23%) wrongly affirm that rhesus factor, blood group and genotype are one and the same thing for everybody only 10 (11.5%) knew the difference whereas 57 (65%) are not aware of the difference between genotype, blood group and rhesus factor. Similarly, 20 (23%) have knowledge that rhesus incompatibility is a condition that occurs during pregnancy if a woman has Rh negative blood and her baby (foetus) has Rh positive blood. That it could pose a major problem in pregnancy, and it could be the cause of obstetric failure in a handful of women. About 67 (77%) indicated 'Don't Know' option.

This implies the majority are not well knowledgeable. These findings are similar to the result of Ali (2014) who investigated Rh Incompatibility: prevalence, knowledge and attitude for premarital test couples. The study aimed to determine the extent of the spread of knowledge, attitudes direction of blood group mismatch between couple. The examinations before marriage include the examination of immune deficiency in addition to the screening of blood type for married couples. The study included all couples who reviewed during this period, voluntarily and without exception, giving them a copy of the questions prepared in advance to find out some details about the subjects included age, sex, educational attainment, and blood type for each pair. The result revealed highest prevalence rate among the holders of blood group (A) as it was 30.1 %, followed by holders of blood group (O) - 29.6 %, then the holders of blood type (B)- 27.2 % and finally the holders of blood type (AB) was 13.1 %. The study found that the proportion of negative blood type was 4.2 %, including 3.6 % among females and 4.75 % for males. In conclusion, less than half of the study group knew about rhesus factor and the blood test done for them. Subjects with higher education gave the highest rate of true response, the illiterate on other hand gave the lowest true response about which case results in incompatibility. On the overall, the level knowledge was low especially among the illiterate respondents.

On Rh incompatibility complications may not happen during a person's first pregnancy as the mother's blood may not mix with the foetus's blood until delivery. However, Rh incompatibility becomes a problem if one becomes pregnant a second time and have another Rh-positive foetus. In this case, the body will produce antibodies. About 27 (31%) show awareness about this fact 20 (23%) wrongly disagreed while 40 (46%) do not know. Furthermore, these antibodies (caused by Rh incompatibilities) put the second foetus at risk for complications. Once the body realizes the foetus is Rh-positive, antibodies can pass into the foetus's blood and attack its red blood cells threatening the foetus' life. So many of the respondents are ignorant of these scientifically proven facts. This finding is similar to those of Opara (2023), whose paper reviewed issues related to knowledge of Rhesus incompatibility in Nigeria. It frowned that despite relatively high prevalence rate of Rhesus incompatibility among the public in Nigeria, yet knowledge about it remains very low. The Health Belief Model was adopted as the theoretical framework. However, low level of knowledge of Rhesus incompatibility among Nigerians as identified by Opara (2023) is associated with factors like poverty, lack of access to maternal healthcare, ignorance and religious beliefs. The role of these factors compounds the high prevalence of Rhesus incompatibility in Nigeria in comparison with other countries.

Rh incompatibility continues to thrive in Nigeria as a result of a combination of factors that has been identified in this study. Similar study suggests that poverty is the major inhibiting factor of knowledge about Rh incompatibility. He argues that the inability to access robust

healthcare before, during and after pregnancy by women exposes them to Rh complications. Addressing the problems of poverty which affects access to healthcare will improve the knowledge about Rh incompatibility in Nigeria. In the same vein, ignorance has been identified as a key factor in Rh incompatibility. With a significant rural population that lacks access to regular sources of health information, the Nigerian woman is considered by Adeyemo and Soboyejo (2016) as ignorant by design and not by choice. This form of ignorance affects healthcare choices like Rh compatibility checks. Rh checks are often ignored because of lack of knowledge about its importance/relevance. In some cases, the incompatibility is discovered after irreversible damages have been done. Ali (2014) submits that there is need to properly educate women especially rural dwellers on the factors surrounding Rh incompatibility.

Table 2 Attitude towards Rhesus Incompatibility

S/N	Item	Yes	No	Don't Know
7	It is important to carry out genotype and rhesus incompatibility test before childbearing and during pregnancy.	30 (34.5%)	20 (23%)	37 (42.5%)
8	All women should do maternal-foetal compatibility test whether recommended especially during pregnancy.	17 (19.5%)	20 (23%)	50 (57.5%)
9	I am scared and reluctant about doing rhesus incompatibility test because I am afraid to be positive.	50 (57.5%)	37 (42.5%)	0 (0%)
10	I really care about my rhesus factor. I do discuss with my partner about maternal-foetal incompatibility.	20 (23%)	60 (69%)	7 (8%)
11	If there is incompatibility, I will prefer to get treatment from the doctor or certified healthcare givers.	50 (57.5%)	27 (31%)	10 (11.5%)
12	Prayer or traditional methods is the best way to tackle rhesus incompatibility as it may be caused by evil forces.	30 (34.5%)	40 (46%)	17 (19.5%)

Table 2 gives the summary of the attitude of women of child-bearing age to rhesus incompatibility. About 30 (34.5%) affirmed the importance to carry out genotype and rhesus incompatibility test before childbearing and during pregnancy. However, 20 (23%) wrongly were of contrary opinion while 37 (42.5%) did not know whether or not it is necessary to check one's status recording rhesus incompatibility. Some are skeptical about getting tested. Some expressed fear of not knowing the result. These are all negative attitudes. About 50 (57.5%) of them were scared of being positive with the proton while 37 (42.5%) report not being scared. What the majority failed to realized was the fact that whether or not they are tested, the result will remain what it is; and that, it is better to be tested so as to know the necessary treatment to be taken in case of incompatibility. Also, only 20 (23%) really care about rhesus factor. Majority of them 60 (69%) do not care nor discuss with their partners about maternal-foetal incompatibility. In case there is incompatibility, 50 (57.5%) affirmed the will prefer to get treatment from the doctor or certified healthcare givers; 27 (31%) do not while about 10 (11.5%) were indifferent about it. Furthermore, 30 (34.5%) preferred prayer or traditional methods is the best way to tackle rhesus incompatibility as they believed it may be caused by evil forces; while 40 (46%) do not and 17 (19.5%) indicated 'Don't Know'.

From the foregoing, the attitude of the respondents was poor as they hold unto various beliefs based on culture, religion and misconceptions. So, some believed rhesus incompatibility

is an act of God and there was nothing anyone can do about. Others do not really bother while for some, they were completely ignorant and as such, possess negative attitude towards it. People are not aware of the issues surrounding Rh incompatibility especially as they choose their partners of get pregnant/undertake abortions. While it has been stabled that the Rh incompatibility risk for African women is 3 times higher than that of no-African women, there is an observed knowledge gap about this reality (Opara, 2023). Some factors responsible for this knowledge gap has been identified as ignorance, poverty, inability to see the benefits in ascertaining ones Rh before getting married or pregnant and religious beliefs.

Studies reviewed in this project have shown that ignorance is at the core of the inability or unwillingness to factor in Rh status by women while pregnant. The health belief model explains that the perceived susceptibility to a particular illness or disease informs people's decision to seek healthcare. Ignorance impedes the knowledge of the public on their susceptibility to Rh related complications. The cost of accessing healthcare is another significant factor influencing the knowledge of Rh incompatibility. Nigeria is largely a poor country without a robust health insurance policy for its citizens. This has placed the burden of healthcare solely on the patients' ability to pay cash off pocket every time they need to visit the hospital. This is a significant barrier that discourages knowledge of Rh incompatibility. Also, the affordability of healthcare is affected by poverty. Conditions that could be prevented with the use of drugs become complicated because of poverty. For instance, women whose Rh are incompatible with those of their newborns are expected to take doses of Rogham injection to keep the body safe for future conceptions (Opara, 2023). However, the cost of the drug hovers around 40,000-50,000 per shot. With a minimum wage of 30, 000 naira and a multidimensional poverty involving 133 million Nigerians (NBS, 2022), most people who need this drug are cannot afford it. Improved access to healthcare especially antenatal and postnatal healthcare can improve the knowledge of Nigerians about Rh incompatibility. These play a major role in the negative attitude displayed. The patients in some cases, resort to depend on God for miracle.

The study of Kio et al. (2016), on attitude of women towards incompatibility was a bit contrary to the findings of this study. The result of respondents' attitude regarding maternal-fetal blood incompatibility was fairly positive, though, a significant number still displayed negative attitude. The women were assessed for positive and negative attitudes. Generally, the respondents exhibited average 'positive' attitude towards incompatibility test (56%) and low 'negative' attitude (38%). Many (60%) of the women believed maternal-fetal compatibility test is very important especially for pregnant women and are not afraid to do the test (67% of respondents) however, 56 % of the respondents felt the test procedure will be embarrassing. This result showed that pregnant women in the study area did not really see maternal-fetal blood incompatibility as a serious problem. Clearly the low level of knowledge must have been responsible for these obtained attitudes.

Table 3 Preventive and Management Measures to Rhesus Incompatibility

S/N	Item	Yes	No	Don't Know
13	Checking one's blood group and rhesus factor before getting married and pregnant by would be mothers.	67 (87%)	10 (13%)	0 (0%)
14	Knowing one's husband/partner's blood group and rhesus factor before getting married and bearing children in order to get treatment if needed.	60 (69%)	0 (0%)	27 (31%)
15	Seeking professional advice from health centres on how best to prevent rhesus incompatibility.	87 (100%)	0 (0%)	0 (0%)
16	Attending antenatal care services where health education on prevention of rhesus incompatibility is given.	87 (100%)	0 (0%)	0 (0%)
17	Carrying out foetal blood compatibility test during pregnancy to be sure of the foetus' status or blood type.	20 (23%)	20 (23%)	47 (54%)
18	If there is incompatibility, getting treatment within the prescribed times by professional caregivers.	87 (100%)	0 (0%)	0 (0%)

Table 3 summarises the result for the prevention and management of rhesus incompatibility. Checking one's blood group and rhesus factor before getting married and pregnant by would be mothers, 67 (87%) affirmed that it was necessary while 10 (13%) thought otherwise Also, regarding Knowing one's husband/partner's blood group and rhesus factor before getting married and bearing children in order to get treatment if needed, 60 (69%) ticked yes while 27 (31%) indicated 'Don't Know' option. However, all 87 (100%) said yes to seeking professional advice from health centres on how best to prevent rhesus incompatibility. Similarly, all 87 (100%) are of the opinion of pregnant women attending antenatal care services where health education on prevention of rhesus incompatibility is given especially before the second pregnancy. Carrying out foetal blood compatibility test during pregnancy to be sure of the foetus' status or blood type can inform appropriate actions to forestall incidence of Rh incompatibility. If there is incompatibility, getting treatment within the prescribed times by professional caregivers is indispensable.

In terms of preventive practice of getting tested, a reasonable proportion of the respondents agreed with the need and expressed readiness. This finding is similar to those of Kio et al. (2016) study, where assessment was done to determine the women's practices with respect to maternal-fetal blood incompatibility. The result showed that only 42 percent of the respondents have done the test. Most of the women who took the test did so in their first trimester (41% as shown in Table 4) which is the gestational age of the trimester. Most of these women (79%) did the test at the hospital where they are attended to by health professionals. However, some 21 % of the respondents still patronized the traditional birth place for this test despite the fact that they were attending the teaching hospital for other pre-natal activities. It appears that the emphasis on maternal-fetal blood incompatibility and the need for the test is not well highlighted in the general pre-natal counselling delivered by the teaching hospital. This raises a serious policy concern.

The factors influencing the respondents' uptake of maternal-fetal blood incompatibility test were determined and presented. The regression result showed that out of all independent variables, the coefficient of the age of the pregnant women ($p< 0.1$), income level ($p< 0.05$), knowledge level ($p< 0.05$) and number of previous births ($p< 0.05$) were significant with appropriate signs. This implies that mothers' income, knowledge and number of previous births

increases the probability of the respondents' taking the test. The coefficient for the age of the respondents ($p< 0.1$) was significant with a negative sign showing an inverse relationship between age and the probability of the respondents taking the incompatibility test. This implies that older women show less need for the test since they probably have done it in the past or see no need since they already have healthy children. Salem (2011) have shown that Rh incompatibility was possible in women who were either primiparous or had delivered a child in the past. The descriptive result showed that many of the women have had previous births, thus many they are vulnerable to maternal-fetal blood incompatibility. This result is consistent with the findings of Kio et al. (2016). Judging from earlier descriptive results, they have overall poor knowledge and attitude, increasing these factors is therefore pertinent to increase uptake of the test.

Conclusion

Rh incompatibility complications may not happen during a person's first pregnancy as the mother's blood may not mix with the foetus's blood until delivery. However, Rh incompatibility becomes a problem if one becomes pregnant a second time and have another Rh-positive foetus. In this case, the body will produce antibodies. Sadly, most of the respondents in this study had poor knowledge and practices with respect to maternal-fetal blood incompatibility. Findings showed that pregnant women in the study area did not really see maternal-foetal blood incompatibility as a serious problem. Clearly the level of awareness is low and the low level of knowledge must have been responsible for negative attitudes. Therefore, interventions aimed at social and behaviour change should primarily target increasing knowledge, improving attitudes and addressing the gaps in practices highlighted by the study is recommended. More efforts should be made to make the incompatibility test even free to women attending clinics. Community healthcare service providers and churches should include in their services to counsel women on the importance of maternal-fetal blood incompatibility test. Women of childbearing age should cheek their status and those of their partners in terms of blood group, genotype and resource compatibility before engaging in relation for the purpose of procreation.

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