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Interrogating Factors Affecting Knowledge and Management of Rhesus Incompatibility among Women of Reproductive Age in South-East Nigeria

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ABSTRACT: Introduction: Despite rhesus incompatibility being a public health issue in most developing nations, adequate knowledge and management are dire in families. Several other non-medically related factors are associated with the condition emanating from cultural belief. This study examines the factors affecting knowledge and management of rhesus incompatibility among women of reproductive age in Southeast Nigeria. Methodology: The study adopted mixed research method for triangulation, using the Taro Yamani formula a sample size of 1,111 was generated from an approximate population of 7,651,713. Data was gathered using a structured questionnaire guide and IDI. Data was gathered by the researcher aided by some research assistance. The SPSS version 20.0 was used to process quantitative data while the qualitative data was thematically analysed. Findings: the study among other findings found that social barriers constrained the knowledge and management of rhesus incompatibility (44.0%); lack of education was seen as one of the social

barriers (27.0%); also lack of adequate public awareness is also considered as another major factor (28.6%). The socio-cultural beliefs of the people were also associated with a lack of knowledge and awareness of the Rhesus factor (22.7). Conclusion: The increasing rate of rhesus-related disease with low awareness calls for consented public awareness as certain social and cultural factors such as low education and information lead to a misconception of the disease thereby many associating it with non-medically related explanations further causing dire complications. The government, non-governmental agencies, antenatal centres and educational institutions need to participate in enlightening couples, pregnant women and intending couples.

Keywords: *Rhesus factor, incompatibility, Socio-cultural factors, Disease*

Introduction

The Rhesus factor, also known as the 'Rh factor', is a protein found on the surface of red blood cells in most individuals. It is one of the major blood group systems used in human blood transfusion and pregnancy-related medical interventions. The discovery of the Rhesus factor dates back to the early 20th century. In 1939, Landsteiner and Wiener, two scientists working at the Rockefeller Institute in New York, were studying the blood of Rhesus monkeys (hence the name "Rhesus factor") when they made a significant finding. They injected Rhesus monkey blood into rabbits and observed that the rabbits produced an immune response, creating antibodies that reacted with the monkey blood cells.

Rhesus factor is never a concern during a woman's lifetime until she becomes pregnant. When a woman is pregnant, it is probable that the baby will have a different blood type from her own, and there is no concern with this unless the mother is Rh negative, and the father is Rh positive – incompatible rhesus. If one is a rhesus negative mother, the blood cells lack a specific protein found on the surface of red blood cells called a Rhesus D (RhD) antigen. If the blood of an RhD-negative mother and the blood of a RhD positive infant come in contact (or mixes), the mother's body produces some antibodies in response to the red blood cells that appear foreign to her body. Thus, giving rise to rhesus disease for the baby, which can result in high morbidity and oftentimes death of the neonate. Rhesus disease is a

condition which affects an unborn baby when its mother's immune system generates antibodies which attack the baby's red blood cells.

Rhesus disease has been identified as one of the causes of perinatal death. Couples with incompatible rhesus are at risk of this condition. It is important to note that sensitization occurs in the first pregnancy, but the risk is only to the subsequent pregnancies. Obviously, injury or trauma may result in the mixing of blood between the mother and baby. This is seen occurring in approximately 10% of cases. The National Demographic and Health Survey suggests that the prevalence of Rhesus negative women in Nigeria varies between 5 and 9.5% with higher occurrence of about 44.7 percent in southern Nigeria. The report further revealed that Perinatal Mortality Rates of 72/1000 and 69/1000 live births respectively. This drop is insignificant and troubling when compared to lesser outcomes in some countries of the world. Perinatal morbidity such as jaundice, asphyxia etc. arising from incompatible rhesus of spouses' accounts for a significant percentage of perinatal mortality. Again, another report has implied demographic factors such as age, birth interval, education, income and place of residence in the onset of perinatal/neonatal mortality. The current emphasis on compatibility of genotypes for couples, as check against sickle cell disease, seems to have sublimated the need for rhesus consciousness among couples. While statistics show that about 7-9 million babies die annually, of which 98% occur in the tropics and developing countries where perinatal mortality rates are between 57 and 100 per 1000 birth, awareness of this remains low and knowledge is still largely influenced by cultural beliefs, for instance the Abiku or Ogbanje (spirit child) syndrome. Like maternal mortality, perinatal mortality is also preventable, but knowledge of the phenomenon remains a big challenge in many parts of Nigeria.

The challenge of rhesus disease has remained a global public health burden disproportionately heavy for the poorest countries. One of the identifiable factors that sustained the persistence of rhesus related complications is lack of awareness, as a report from Pakistan indicated that pregnant women are less informed about rhesus incompatibility, its complications and prevention. It is estimated that globally 276/100,000 rhesus complications are recorded annually while in Southeast Asia/Pacific countries and Latin America 57,252/100,000/per year respectively.

Reproductive risk of rhesus negative women in Africa is three times more than that of non-African women which indicates that there is a problem that needs to be looked into. In Kenya, the data stands at 9% and in Nigeria about 4.44% per year rhesus complications are recorded. Rhesus disease leads to multiplicity of ill health conditions for infants affecting the socio-economic status of parents.

The impact of the complications differs depending on age, a mildly affected infants may have little or no anaemia.

It has been argued that knowledge, attitudes and practices of expectant mothers on foetal blood incompatibility is as low as 39% in Asia. This shows that they are also ignorant of the danger it poses. Moreover, those that are aware of the importance may not know how to go about the management of rhesus incompatibility.

A WHO report suggests that neonatal mortality is responsible for about 46% of deaths of children under 5 years and a large amount of it is caused by problems like rhesus incompatibility. Rhesus (Rh) disease results in neonatal mortality and long-term neurodevelopmental impairment. It is estimated that there were about 52000 stillbirths due to rhesus disease in Asia. Despite the fact that the prevalence of Rh-negative phenotype is significantly lower among Africans compared to Caucasians, the prevalence of Rhesus haemolytic disease of the foetus and new-born is on the rise in some settings in Sub-Saharan Africa and Rh alloimmunization remains low.

Although scholars have examined issues relating to rhesus incompatibility for instance the awareness of Saudi Females about complication of Rhesus factor (Rh) Incompatibility during Pregnancy in Taif City, Saudi Arabia. Another study on determinants and the prevalence of RhD negative among the pregnant population attending antenatal clinic of a young tertiary health institution in Ogbomoso, a semi-urban town in southwestern Nigeria, and also the challenges faced by this sub-population of pregnant women. However, not much is known s on the role of social factors play in rhesus incompatibility among women of reproductive age in South-east Nigeria. Therefore, this study is focused on interrogating social factors, affecting knowledge and management of rhesus incompatibility among women of reproductive age in southeast, Nigeria.

Methods

Study setting and design

The study adopts a mixed research design. The mixed research design involves collecting, analysing, and integrating (or mixing) quantitative and qualitative research methods (and data) in a single study (Creswell, 2014). South-East Nigeria is presently made up of five states, namely, Abia State, Anambra State, Ebonyi State, Enugu State, and Imo State. It is an Igbo-speaking region with 95 Local Government Areas that cut across its five states (Abia State has 17 LGAs; Anambra 21; Ebonyi, 13; Enugu, 17; and Imo, 27), and the majority of its population are Christians.

The socio-cultural organization of the South-Eastern people of Nigeria is mainly based on membership in kinship groups and parallel but complementary dual-gender associations which are important to societal integration. Although the South East people are involved in agriculture, the people are mainly business oriented as they trade across Niger and beyond. All the states in Southeast Nigeria which include Abia, Anambra, Ebonyi, Enugu, and Imo have both Federal and State-owned hospitals where rhesus compatibility tests can be carried out. There is a Federal Medical Centre in Umuahia Abia; Nnamdi Azikiwe University Teaching Hospital Nnewi Anambra, Alex-Ekwueme Federal Teaching Hospital Abakaliki, University of Nigeria Teaching Hospital Enugu, and Federal Medical Centre Oweri Imo States respectively. The Southeast region though is populated by predominantly educated people; however, the people still attribute certain social phenomena to traditional beliefs. Explanatory narratives of healthcare outcomes are also offered through the lens of non-orthodox medicine as such this study will seek to understand the extent the which people's knowledge relating to rhesus incompatibility influences their practice.

Population for the study

The total population of South-East Nigeria based on 2006 National Population and Housing Census was 16,395,555 people (8,184,951 for male and 8,210,604 for female). However, the stated population will be projected to 2022 through the application of mathematical method; thus:

$P_1 = P_0 (1 + r/100)^t$

Where;

P_t – Population at time (t)

r - Annual growth rate (3.2)

t – Inter-censual period (the gap between 2006 and 2022… 16 years)

Therefore

South-East female population is projected to (2022)

$(1+3.2/100)^{16}$

$= 8,210,604 (1.032)^{16}$

$= 8,210,604 (1.6552941)$

$= 13,590,964$

Therefore, the general female projected population for the South East is 13,590,964. A World Bank report suggest that the population of the women of reproductive age in Nigeria is 56.3% of the total female population. Thus, our target population is: 56.3/100 x 13,590,964 = 7,651,712.732. It is approximated to 7,651,713.

Sample Size

The sample size was determined statistically using the Taro Yamane formula. The

formula is given as: $n = N/1+N (e)^2$

Where:

n = required sample size
N = the target population
e = margin of error (3% or 0.03)

Applying the formula:

$n = 7,651,713/1+7,651,713 (0.03)^2$

$n=7,651,713/1+7,651,713 (0.0009)$

$n=7,651,713/1+ 6,886.54$

$n=7,651,713/6,887.54$

n= 1,110.95. It is approximated to 1,111

Sampling Techniques

The multi-stage sampling procedure is considered relevant for this study because the study population was large. In the first stage, the five states in the Southeast Abia, Anambra, Imo, Enugu and Ebonyi were written on 5 different pieces of paper, folded, and put in a bowl. Using the hand drawing method without replacement, 3 states of Abia Enugu and Ebonyi States were selected.

The second stage involved listing the local government areas in each of the selected states. The names of these LGAs were written on pieces of paper, folded, and placed in 3 bowls. Each of the bowls was labeled as a state, and the local government areas that make up each of the selected states were placed in the corresponding bowl. Using the hand drawing method without replacement, 2 LGAs from each of the selected states were selected. These includes Abia State - (Umuahia North and Isiala Ngwa North LGAs); Ebonyi State – (Ishielu and Abakaliki LGAs); and Enugu State – (Enugu East and Nkanu east LGAs).

The third stage is a list of the towns and communities in each of the selected local government areas. The names of these towns were written on pieces of paper, folded, and placed in 3 bowls. Each of the bowls were labeled as a local government area, and the towns that make up each local government area placed in the corresponding bowl. Using the hand drawing method without replacement, 2 towns from each of the selected local government areas were selected. The selected towns are Umuahia North LGA – (Ibeku and Umuhu-na-Okaiuga); Isiala Ngwa North LGA – (Nsulu and Umuaja); Ishielu LGA – (Ezzilo and Okpoto); Abakaliki LGA (Azu Ebonyi and Ishieke); Enugu east LGA – (Emene and Abakpa) and Nkanu east LGA (Unateze and Ama Nkanu).

The fourth stage will is a list of the streets and villages in each of these towns and communities. The names of the streets are written and placed in containers. Using the hand drawing method without replacement, 5 streets or villages were selected in each of the towns and communities. This gives a total number of 150 streets. Using the systematic random sampling technique with a random start, 8 households were selected for each of the selected streets and villages. This gives a total of 1200 households. Furthermore, in each of the selected households, one eligible respondent

was selected using the availability sampling technique. In situations where an eligible respondent may not be in a selected household, such a household was skipped for the next available household. This process was repeated where applicable until the sample size is achieved.

On the other hand, the purposive sampling technique was used in selecting participants for an In-depth Interview (IDI). The IDI participants were 6 selected pregnant women 2 in each of the selected States). They were selected to provide in-depth information on the subject matter, as well as their subjective experiences as the primary target population for the study.

Data collection

The instruments for data collection in this study are questionnaire and in-depth interview guide (see appendix A and B) because of the need for mixed-method research. The questionnaire, specifically, was used to collect quantitative data, and it was highly structured. It also has two different sections. The first section contains the socio-demographic characteristics of respondents while the other section addresses the substantive issues in knowledge and practice of rhesus incompatibility in South-East Nigeria, guided by the specific research questions, objectives and hypotheses. The in-depth interviews on the other hand, were employed to gather qualitative data to complement the quantitative data for deeper understanding. The instruments were peer validated.

Administration of Instruments

The quantitative questionnaire was administered by the researcher himself with the help of 6 research assistants. The research assistants were recruited based on their ability to read and write and speak and understand both English and the local dialects of the communities. There were 6 females whom the respondents feel more comfortable responding to. Their research assistants were trained and familiarized with the objectives of the study, the relevance of the study, administration, and retrieval of the questionnaire.

The in-depth interviews were conducted by the researcher with the help of three of the research assistants. This means that all the six research assistants were involved in the in-depth interviews at one point in time or the other depending on the location

being interviewed. The researcher moderated the interviews, while the three assistants performed the role of note-taking and recording respectively. The quantitative data were analysed with the Statistical Package for Social Sciences (SPSS) Version 20.0. The qualitative data was sorted, cleaned and analysed thematically.

Results

The study enquired on if there were possible social barriers limiting knowledge and awareness of Rhesus factor related issues within the study area. The findings are presented in table 8.

Table 1: Respondents' views on whether they were social barriers in accessing rhesus related knowledge and practice

Responses	***Frequency***	***Percentage***
Strongly Agree	321	39.3
Agree	359	44.0
Undecided	65	7.9
Disagree	26	3.2
Strongly Disagree	45	5.6
Total	**816**	**100**

Field Survey, 2024

Table 1 shows that a majority of the respondents 321(39.3%) strongly agreed that there were barriers in assessing knowledge related to Rhesus factor while 26(3.2%) disagreed. This implies that several factors are limiting women of reproductive age from accessing becoming aware and knowledgeable about rhesus incompatibility. The qualitative data corroborated the quantitative data with very insightful data…

A participant stated thus:…

"This is actually the main issue about Rhesus factor and every other health challenge within our environment. Barriers are just too many especially among those rural women they are ignorant of these issues and they belief strongly on their traditions and custom. They will find it very difficult to accept going for test nor adhering to orthodox medicine." ***(Student, 22 years of age, rural residen*****ce).**

Another participant affirmed the above…

> "The challenge is ignorance and long held believe. Also, the awareness on rhesus is actually very low. Although some women will even tell you they don't have money for hospital or clinic they prefer visiting (Chemist) local pharmacy shops and traditional birth attendants for pregnancy related issues" (***Self-Employed, 31 years of Age, Urban residence).***

The third participant differed just a little

> "Well, many people who are educated are aware but uneducated people are the once facing barriers. The barriers are low awareness it is not a subject people discuss very often even in churches nor in social gatherings. All you hear about is genotype and HIV AIDs but this rhesus even in hospitals is as though the doctors and nurses only remember it at the end" ***(Public Servant, 33 years of Age, Urban residence***).

Educational attainment as a social concept was examined to understand if it poses a barrier to knowledge and awareness on Rhesus factor within the study area. The findings are presented in table 2.

Table 2: Respondents' opinion about whether lack of educational attainment Impact on Knowledge of rhesus incompatibility

Responses	***Frequency***	***Percentage***
Strongly Agree	141	17.3
Agree	220	27.0
Undecided	177	21.7
Disagree	185	22.8
Strongly Disagree	95	11.2
Total	**816**	**100**

Field Survey, 2024

Table 2. shows that a majority of the respondents 220(27.0%) agreed that educational attainment has an impact on knowledge and awareness of rhesus incompatibility while 95(11.4%) strongly disagreed. This implies that the level of education a respondents acquired shapes the extent of knowledge and awareness of the person on rhesus incompatibility. The qualitative data supported the quantitative data thus…

Well for me I think education and enlightenment plays a great role in this issue…

Probed; how exactly does education play a role?

> "You know must uneducated people find it very difficult to change, I mean they don't easily accept new ideas or information. So even when they are told to go for a test they will refuse unless the issue becomes very complicated then they will move. Lack of education predisposes them to resist change, that's what I am saying. Some of them belief in many things so telling them about Rhesus is sometimes waste of time." ***(Public Servant, 35 years of Age, Urban residence).***

Another participant suggested another factor:

> "Well for me it is not just education. Hmmmm I have seen some people who are educated yet will tell you that their church does not support what you are saying. I think religion is even a stronger factor or barrier." ***(Farmer, 31 years of Age, Rural residence)***

Probed; why do you think Religion is stronger

> Our people are very religious, I must tell you, you will not understand shaa. Once their pastor, Rev's father or whoever tell them anything whatever thing you are saying contrary to that first idea is false they won't take it, those that do traditional worship is even worst laughing (***Student, 24 years of Age, Rural residence)***

The study further probed to understand if low public awareness is a major barrier to rhesus incompatibility knowledge within the study area. The findings are presented in table 3.

Table 3: Respondents' views on whether low public awareness is a major barrier to rhesus compatibility decision

Responses	***Frequency***	***Percentage***
Strongly Agree	233	28.6
Agree	182	22.3
Undecided	132	16.2
Disagree	225	27.6
Strongly Disagree	44	5.4
Total	**816**	**100**

Field Survey, 2024

Table 3. shows that a majority of the respondents 233(28.6%) strongly agreed that low public awareness is the major barrier for rhesus compatibility while 44(5.4%)

strongly disagreed. This implies that one of the reasons why many people are not aware of rhesus related issues is as a result of low public awareness. The qualitative data corroborated the quantitative data…

> "I think I said it before awareness is basically on HIV/AIDs, Genotype and things like that. This Rhesus issue is never discussed that is why I am not aware of it till today you came and started talking about it" *(Public Servant, 35 years of Age, Urban residence)*

Probed; do you really listen to the radio, watch TV often?

> "Yes, I do we always have electricity here in the village in fact I go to farm with radio sometimes they don't talk about it. The little health information we get like the once I mentioned is from the church and sometimes during our meeting but Rhesus own (mba oo) no oo we have not heard about" ***(Farmer, 31 years of Age, Rural residence)***

Another respondent equivocally asserted… Truth is there is no awareness on this issue ***(Student, 22 years of Age, Urban residence).***

The study further examined if place of residence as a social variable plays a role as barrier to knowledge and awareness of Rhesus factor within the study area. Findings are presented in table 4.

Table 4: Respondents Views on whether place of residence affects access to Rhesus factor testing facilities and treatment

Responses	***Frequency***	***Percentage***
Strongly Agree	233	28.6
Agree	178	21.8
Undecided	44	5.4
Disagree	269	33.0
Strongly Disagree	92	11.3
Total	**816**	**100**

Field Survey, 2024

Table 4 shows that a majority of the respondents 269(33.0%) did not agree that place of residence affects access to Rhesus factor testing facilities while 44(5.4%) were undecided. By implication the place one resides does not inhabit the person from accessing rhesus test facility. Data from the qualitative responses were a bit conflicting while some respondents affirmed the role of place of residence as

contributing to rhesus barrier others argued that both those in cities and urban environments are equally not aware of the factor. This implies that general awareness is low irrespective of place of residence.

Table 5: Respondents views regarding socio-cultural beliefs as major berries to rhesus knowledge and awareness of rhesus incompatibility

Responses	***Frequency***	***Percentage***
Strongly Agree	185	22.7
Agree	92	11.3
Undecided	181	22.2
Disagree	313	38.4
Strongly Disagree	45	5.5
Total	**816**	**100**

Field Survey, 2024

Table 5 shows that a majority of the respondents 313(38.4%) did not agree that socio-cultural beliefs were major barriers to rhesus knowledge and awareness while 45(5.5%) strongly disagreed. This could be perhaps due to Western influence that has reduced the effect of cultural practices within the area of study.

The study examined if the prevailing religious belief within the study area accepts the prevalence of Rhesus factor as a health care challenge. The findings are presented in table 13.

Table 13: Respondents' views on whether their religious belief accepts the Rhesus factor

Responses	***Frequency***	***Percentage***
Strongly Agree	451	55.3
Agree	91	11.2
Undecided	39	4.8
Disagree	98	12.0
Strongly Disagree	137	16.8
Total	**816**	**100**

Field Survey, 2024

Table 13 shows that a majority of the respondents 451(55.3%) strongly agreed that religious belief affects acceptance of Rhesus factor condition while also 39(4.8%)

Undecided. This implies that religiosity goes a long way to determine the acceptance of Rhesus factor condition or not. It could perhaps be that a certain religious organization does not accept the testing nor its results. The response from most people in rural areas affirmed the quantitative data thus… *Well for us in this community we believe in our Rev Father, he is educated, I mean he went to school, so he knows everything. He has not told us anything about this rhesus you are talking about, so well I believe you, but I don't know more* ***(Farmer, 28 years of age, rural residence).***

Another respondent argued differently…

> "*Religion does not determine my healthcare. Those within the religious cycle are not healthcare professionals. They have talked about Rhesus in the hospital before, so I believe it is real"* ***(Self-employed, 29 years of age, urban residence)***

Another respondent provided a more nuanced data…

> "Personally religious believe don't determine my health believe system. I believe what healthcare professionals say, yes, I am educated so I know the difference. I believe the Rhesus factor is actually real. But let me also say our society is predominated by different religious beliefs. So, it won't surprise me if some religious organizations don't believe in rhesus related issues" ***(Public servant, 27 years of age, urban residence)***

Lastly, the study examined the most appropriate strategy towards increased public knowledge and awareness on Rhesus factor. The findings are presented in table 21.

Table 21: Respondents views on the strategy towards increased awareness and knowledge and practice of rhesus incompatibility

Responses	***Frequency***	***Percentage***
Radio jingles and messages	15	1.8
Television jingles and messages	117	14.3
Seminars in hospitals	366	44.9
Marriage Counsellors (advisory)	91	11.2
Grass root awareness creation	227	27.8
Total	**826**	**100**

Field Survey, 2024

Table 21 shows that a majority of the respondents 366(44.9%) indicated that seminars in hospitals will go a long way in sensitizing women of reproductive age while 15(1.8%) indicated that the radio would be a better means of creating public awareness and knowledge of women of reproductive age on the dangers of rhesus incompatibility. This implies that there is need for strategic awareness targeted at the population strata so as to increase their awareness. The qualitative data brought more elaborate insights on the issue… It is not a matter of radio announcement they is need for intervention in rural areas with discussion in meetings and all forms of gatherings visit the women in their churches and everywhere (Public Servant, 39 years of age, Urban residence)

Other respondents stated thus…

> "Many within this community don't have radio nor TV so if it is possible they should come and teach us in churches or during our meetings" (Rural farmer, 32 years of age, rural residence).

Discussion of findings

This study explored factors affecting knowledge and management of Rhesus incompatibility among women of reproductive age in Southeast Nigeria. Although Rhesus incompatibility is a global public health issue, the burden and dire consequences are said to be felt most by poor couples within developing societies. From the qualitative and quantitative data, the study found that there were barriers that hinder access to Rhesus knowledge, lack of education was implicit as a barrier and this finding corroborates a world health organization report which associated lack of education as barrier to improved Rhesus factor care. Their data suggested that limited education and training for healthcare professionals regarding the Rh system and its implications is a significant barrier to Rh compatibility awareness. However, the focus of this study is not on healthcare professional rather women of reproductive age within the study location. Nevertheless, healthcare professionals who lack knowledge and understanding of the Rh system and its implications may not be able to inform their patients about the risks of Rh incompatibility. As a result, patients may not be aware of the importance of Rh compatibility during pregnancy.

Within the culture areal the study is situated, socio-cultural believes overshadow other explanations of social phenomenon therefore there is a likelihood that consequent outcomes of rhesus incompatibility for example perinatal death could be attributed to spiritual forces, enemies of the couple and perhaps other non-biological health-oriented explanations. As a result of these prevailing believe system, the study investigated if perinatal deaths are seen as a spiritual manifestation. The quantitative data found that a majority of the respondents alluded to spiritual forces, this finding is supported by other studies which suggested that cultural and social beliefs are some of the barriers against Rh.

However, the qualitative data from this study revealed a mixed response. Some respondents supported spirituality as the cause of perinatal deaths for instance suggesting that perhaps the women have a spiritual husband that takes away her baby or maybe her enemies don't want her to have a baby, in contrast to this finding limited resources to implement universal anti-D prophylaxis in developing nations is attributed to the increasing challenge of Rh. Similar findings from this study agreed that Rhesus factor that is unattended could be the cause of such deaths. One of the reasons it remains unattained could actually be finance. It has to be noted that the second category of respondents are few. The study also found that an overwhelming majority of the respondents agreed that their religious belief accepts the existence of Rhesus factor.

The study equally found low public awareness as a barrier especially among rural dwellers. Though their respondents acknowledge resisting new ideas due to lack of education. However, it was also found that persistent intentional public awareness will significantly lead to acceptance to of modern Rh practices, similarly research finding suggest that strong community support groups as measures towards increased awareness and knowledge of RH are all in tandem with the findings of this study. The data on place of residence as a factor militating knowledge and awareness on Rhesus factor did not reveal a positive response both from qualitative and quantitative data. It was substantiated that both urban and rural residents are not very much aware and knowledgeable of the Rhesus factor.

The qualitative data aligned with respondents suggesting that awareness in rural areas must be intentional, deliberate and done persistently, this in tandem with other study findings on the imperative of patient education and awareness programs and

Conclusion

The study examined the social factors affecting knowledge of Rhesus incompatibility among women of reproductive age in south-east Nigeria. The study found that there were some barriers that prevent people from accessing Rhesus factor requisite knowledge. This was evidence from both the qualitative and quantitative data. Two major themes or variables serving as barriers emerged these are low level of education amongst citizens and poor public awareness. The level of education is said to reflect on if the person will or will not acknowledge the prevalence of RH.

To address this, the study recommends targeted awareness programs and education initiatives, particularly at the grassroots and antenatal care levels. By improving knowledge and awareness, we can empower women to take charge of their reproductive health, reduce the risk of Rhesus incompatibility-related complications, and ultimately improve maternal and child health outcomes in the region. Launch targeted public health campaigns to raise awareness on Rhesus incompatibility, addressing religious, cultural and social misconceptions and promoting education as a key factor in prevention and management. Engage with community leaders and religious figures to promote awareness and education, leveraging their influence to address cultural and social barriers.

Reference

1. Farhan, M. A. (2020). The basic concepts of the effect of Rhesus (Rh) factor on fetus: a mini review. *Earthline Journal of Chemical Sciences*, *4*(2), 175-182.
2. Okeke, T. C., Ocheni, S., Nwagha, U. I., & Ibegbulam, O. G. (2012). The prevalence of Rhesus negativity among pregnant women in Enugu, Southeast Nigeria. *Nigerian journal of clinical practice*, *15*(4), 400-402.
3. Anifowoshe, A. T., Owolodun, O. A., Akinseye, K. M., Iyiola, O. A., & Oyeyemi, B. F. (2017). Gene frequencies of ABO and Rh blood groups in Nigeria: A review. *Egyptian Journal of Medical human genetics*, *18*(3), 205-210.

4. Alicia, S. (2023) ABO Incompatibility in a Newborn: Why Blood Type Matters in Pregnancy. ttps://www.goodrx.com/conditions/pregnancy/abo-incompatibility
5. Olaniyan, T. O., Ajibola, B. M., Rasong, H., Dare, B. J., & Shafe, M. O. (2013). Blood group and rhesus factor pattern among indigenes of FCT, Abuja, Nigeria. *J Community Med Health Educ*, *3*(208), 2161-0711.
6. Lettsky, E., Leck, I., & Bowman, J. M. (2000). Rhesus hemolytic disease of the newborn. In Hematology: Basic Principles and Practice (3rd ed., pp. 543-554). Churchill Livingstone.
7. Bowman, J. M. (1996). Hemolytic disease of the newborn. *Vox Sanguinis*, *70*(S3), 62-67.
8. Macro International. Institute for Resource Development. Demographic, Health Surveys, Nigeria. Federal Office of Statistics, & Nigeria. National Population Commission. (2008). *Nigeria Demographic and Health Survey*. IRD/Macro Incorporated.
9. Bolarinwa, O. A., Ahinkorah, B. O., Okyere, J., Seidu, A. A., & Olagunju, O. S. (2022). A multilevel analysis of prevalence and factors associated with female child marriage in Nigeria using the 2018 Nigeria Demographic and Health Survey data. *BMC Women's Health*, *22*(1), 158.
10. NDHS Reports. (2018). Nigeria Demographic and Health Survey 2018.
11. Ibekwe, P. C., Ugboma, H. U., Onyire, N., & Muoneke, U. (2011). Perinatal mortality in southern Nigeria; less than half a decade to the millennium developmental goals. *Annals of medical and health sciences research*, *1*(2), 215-222.
12. Kanko, T. K., & Woldemariam, M. K. (2021). Prevalence of Rhesus D negativity among reproductive age women in Southern Ethiopia: a cross-sectional study. *BMC Women's Health*, *21*, 1-5.
13. Ibeziako, N. S. (2007). Perinatal and Neonatal mortalities. *Paediatrics and Child Health in a Tropical Region. Owerri: African Educational services*, 160-2.

14. Bergström, S., Povey, G., Songane, F., & Ching, C. H. O. N. G. (1992). Seasonal incidence of eclampsia and its relationship to meteorological data in Mozambique. *Journal of perinatal medicine*, *20*(2), 153-158.

15. Abimbola, O. E., & Olasubomi, O. A. (2021). Assessment of Pregnant Women's Knowledge and Attitude About Rhesus Incompatibility Prevention at Babcock University Teaching Hospital Ilishan-Remo Ogun State.

16. Mwangi, R. W. (1999). Rhesus haemolytic disease of the newborn in Kenya. East African Medical Journal, 76(10), 539-542.

17. Kio, J. O., Agbede, C. O., & Oroniyi, F. A. (2016). Assessing expectant mothers' knowledge and practices regarding maternal-fetal blood incompatibility: evidence from Ogun State, Nigeria. *Greener Journal of Epidemiology and Public Health*, *4*(2), 013-019.

18. World Health Organization. (2016). *Maternal, newborn, child and adolescent health*.

19. Bhutani, V. K. (2012). Public policy to prevent severe neonatal hyperbilirubinemia. *Care of the Jaundiced Neonate. New York: McGraw-Hill Medical*, 243-62.

20. Erhabor, O., Isaac, I. Z., Saidu, A., Ahmed, H. M., Abdulrahaman, Y., Festus, A., ... & Adias, T. C. (2013). The distribution of ABO and Rhesus blood groups among residents of Gusau, Zamfara State, North Western Nigeria. *Res Rev J Med Health Sci*, *2*(4), 58-63.

21. Aljuhaysh, R. M., El-Fetoh, N. M. A., Alanazi, M. I., Albaqawi, A. S., Alanazi, W. M., Alanazi, N. S., ... & Alsunayni, D. S. (2017). Maternal-fetal rhesus (Rh) factor incompatibility in Arar, northern Saudi Arabia. *Electronic physician*, *9*(12), 5908.

22. Adeyemi, A. S., & Bello-Ajao, H. T. (2016). Prevalence of Rhesus D-negative blood type and the challenges of Rhesus D immunoprophylaxis among obstetric population in Ogbomoso, Southwestern Nigeria. *Annals of Tropical Medicine and Public Health| Jan-Feb*, *9*(1).

23. National Population Commission (20006), National Population and Demographic Data. Retrieved from gazettes. Africa

24. World bank (2021) Fertility rate, total (births per women) – Nigeria. Data.worldbank.org

25. Maurice, P., McCallion, J., Fitzgibbon, M., Barthelmes, J. N., Karmous, W., Hardy, E. J., ... & Jouannic, J. M. (2025). Patient experience and burden of haemolytic disease of the foetus and newborn: a systematic review. *BMC Pregnancy and Childbirth*, *25*, 114.

26. World Health Organization. (2016). *Maternal, newborn, child and adolescent health*.

27. Gwaram, B. A., & Abdullahi, S. (2013). Prevalence of Rh phenotypes among blood donors in Kano, Nigeria. *Journal of Medicine in the Tropics*, *15*(1), 37-39.

28. Zipursky, A., Bhutani, V. K., & Odame, I. (2018). Rhesus disease: a global prevention strategy. *The Lancet Child & Adolescent Health*, *2*(7), 536-542.

29. Dorle, A., Gajbe, U., Singh, B. R., Noman, O., & Dawande, P. (2023). A review of amelioration of awareness about blood donation through various effective and practical strategies. *Cureus*, *15*(10).

30. Koby, L., Grunbaum, A., Benjamin, A., Koby, R., & Abenhaim, H. A. (2012). Anti-D in Rh (D)-negative pregnant women: are at-risk pregnancies and deliveries receiving appropriate prophylaxis?. *Journal of Obstetrics and Gynaecology Canada*, *34*(5), 429-435.