

ORIGINAL RESEARCH

Knowledge and perception of the implications of rhesus incompatibility on the choice of marriage partner among public secondary school students in Ogbomoso, Southwest, Nigeria

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ABSTRACT

Introduction: Rhesus (Rh) factor compatibility is crucial for couples, and its awareness is especially important in making decisions on partner choice, to ensure a healthy pregnancy and childbirth. It is essential to understand blood types and potential incompatibility problems before committing to a partner. **Objective:** To assess the knowledge and perception of the implications of rhesus incompatibility on the choice of marriage partners among public secondary school students in Ogbomosho, Oyo State, Nigeria. **Methodology:** A cross-sectional, descriptive multi-stage study design was conducted in selected public secondary schools in Ogbomoso, southwest Nigeria. Data obtained using a self-administered structured questionnaire were analyzed using IBM SPSS version 25, and the results obtained were presented in tables. The level of significance was set at 0.05. **Results:** Most of the respondents (69.61%) had poor knowledge about Rh incompatibility. Most respondents (77.14%) would not consider the Rh Factor when choosing a partner for a serious relationship, while only 18.44% would do so when choosing a partner for a serious relationship. **Conclusion:** Findings from this study reveal inadequate knowledge of Rhesus incompatibility and its implications on the choice of partner. It is therefore pertinent for secondary school students to have adequate knowledge of the implications of the blood grouping system of a partner before marriage and raising a family.

Keywords: Rhesus status; Blood group; Rhesus incompatibility; Life partner

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INTRODUCTION

Rhesus factor (Rh) is a protein present on the surface of red blood cells that determines blood type compatibility. Individuals can be classified as Rh-positive or Rh-negative depending on the presence of the Rh protein. This distinction is crucial during pregnancy, especially when a Rh-negative person carries a Rh-positive fetus, leading to potential complications known as Rh factor incompatibility. If a Rh-negative mother carries a Rh-positive baby, her immune system produces anti-Rh antibodies, potentially causing serious health issues. () These may present as jaundice, hypotonia, lethargy, kernicterus, oedema, problems with mental function, hearing problems, dysarthria, and seizures. Medical interventions, such as administering immunoglobulin shots, are available to prevent these complications and protect the fetus during pregnancy. () Globally, the prevalence of Rh-negative blood groups varies among different ethnic groups and countries. For instance, in sub-Saharan Africa, the prevalence ranges between 2.4% and 4.5%, while in Caucasians, it can be greater than 14%. () The prevalence of Rh incompatibility globally is approximately 15% to 20% in white populations, 5% to 10% in black populations and less than 5% in Asian and American Indian populations. Rh incompatibility occurs in about 1 in 1000 births in the United States, with a slightly higher incidence in the southwest. ()

The prevalence of Rh incompatibility globally and in Nigeria varies. In Nigeria, the prevalence of Rh-positive individuals is around 94.9% of the total population. On the other hand, the prevalence of Rhesus negativity (Rh-) in Nigeria ranges from 2.4% to 11.3% for Rh-D and approximately 8.4% for Rh-D-negative individuals. (,)

Rh factor compatibility is crucial for couples, and its awareness is especially important for students who are likely to make decisions on partner choice, in order to ensure a healthy pregnancy and childbirth. It is essential to understand blood types and potential compatibility issues before committing to a partner. If Rh incompatibility is identified, medical interventions like Rh immune globulin injections can manage pregnancy risks effectively. The major health challenges associated with Rhesus incompatibility include Hemolytic disease of the fetus and newborn (HFDN), fetal anaemia, neonatal hyperbilirubinemia and fetal death with increased or recurrent in subsequent pregnancies. According to the World Health Organisation (WHO), neonatal mortality is responsible for about 46% of deaths of children under the age of 5, and a large amount of it is caused by problems like

rhesus incompatibility. ()

The study aims to determine the effect of the level of awareness and knowledge about Rh incompatibility on the choice of a partner for secondary school students in Oyo State. It will aid in informed reproductive health decisions and preventive measures, reduce misconceptions about blood group compatibility and pregnancy, and promote health literacy and responsible behaviour. By understanding Rh incompatibility, students can make informed decisions about their reproductive health and take preventive measures before choosing a life partner later in life.

RESEARCH METHODOLOGY

Study Design

A cross-sectional, descriptive study design was adopted.

Study Settings and Population

The study was conducted in selected public secondary schools in Ogbomoso, southwest Nigeria.

Sample Size

The sample size was determined using Leslie Fisher's formula below:

$$n = \frac{Z^2 pq}{d^2}$$

n = desired sample size (when population < 10,000). The total number of students is 9,000

z = standard normal deviation or 95% confidence level assuming a normal distribution (1.96)

p = estimated prevalence rate = 0.5

q = 1 – p = 0.5

d = degree of accuracy (use 0.05)

Thus, $n = 1.96^2 \times 0.5 \times (1.0-0.5)$

$$0.05 \times 0.05$$

$$= 384.16$$

Therefore, the minimal sample size required is 385.

Sampling Technique

A multistage sampling technique was used in this study.

Stage 1: Selection of two local governments from the 5 local governments using a simple random sampling. Stage 2: Determining the number of public secondary school in the selected local government. Ogbomosho North has 21 public secondary schools, while Ogbomosho South has 14 public secondary schools. Stage 3: A Total of 10 schools were selected, with 6 schools from Ogbomosho North and 4 from Ogbomosho South using a simple random sampling technique. Stage 4: Samples were selected in each school based on proportionate allocation.

For each of the schools selected, percentage allocation was done based on the population of students in each of the schools.

A. Ogbomosho North

School A allocation (10%) = 39

School B allocation (8%) = 30

School C allocation (12%) = 46

School D allocation (7%) = 27

School E allocation (10%) = 39

School F allocation (5%) = 19

B. Ogbomosho South

School A allocation (10%) = 39

School B allocation (5%) = 19

School C allocation (20%) = 77

School D allocation (13%) = 50

Inclusion Criteria

- Students who are in a senior public secondary school in Ogbomosho.
- Students who consent to participate in the study.
- Students less than 18 years had consent obtained from their parents by written consent note taken home at the

initial visit

Exclusion criteria

- Students who do not consent to participate in the study
- Students who are not physically and psychologically stable were excluded
- Only students who were absent in school on the day of the visit

Research instruments

A self-administered structured questionnaire was used as an instrument of data collection with different sections. Each section seeks to assess, the sociodemographic characteristics, knowledge of respondents on rhesus isoimmunization, and perception. It was pretested at two other schools, different from those selected for the study.

Data Management and Analysis

The data collected was analyzed using the IBM SPSS version 25. Results were presented in tables and charts. Chi-square was used to test the hypothesis with a level of statistical confidence set at 0.05. The mean knowledge score was determined after recoding the data.

Ethical Issues

A letter of introduction was obtained from the Ladoké Akintola University of Technology (LAUTECH), which was taken to schools for approval to carry out the

study. All respondents gave informed consent before being recruited into the study. They were all given a written consent, which they all assented to. It was explained to them that the information given would be kept confidential, and they have the right to pull out of the study before completion of the proforma.

RESULTS

Introduction

This chapter presents the study findings of 385 respondents who participated in this study.

TABLE 1: Respondents' Socio-demographic Characteristics

The data indicate that the majority of respondents were younger than 18 years, with a mean age of 15.65 ± 1.76 years. Specifically, 90.65% were under 18, while 37 respondents (9.35%) were 18 years or older. Most respondents were female, accounting for 234 (60.78%). Additionally, the majority practised Christianity, with 343 respondents

(89.09%) identifying as Christians. In terms of education level, most respondents were in SS2 (282, 73.25%), followed by 65 (16.88%) in SS1, and 38 (9.87%) in SS3.

TABLE 2: Respondents' Knowledge of Rhesus Incompatibility

The table reveals that a majority of respondents, 284 (73.77%), are unaware of their Rh-D blood group status, while only 86 (22.34%) know their Rh-D group. Regarding the eight main blood groups in the Rh factor system, 160 (41.56%) agreed, 104 (24.01%) disagreed, and 121 (31.43%) neither agreed nor disagreed. Nearly half of the respondents, 192 (49.87%), understand that the Rhesus

factor is related to blood groups, while 90 (23.38%) do not, and 103 (26.75%) are uncertain. Additionally, 157 (40.78%) agreed there are antigens and antibodies associated with the Rh factor system, 95 (24.68%) disagreed, and 133 (34.55%) were unsure. Lastly, 184 (47.79%) believe the Rh blood system influences susceptibility to certain diseases, while 82 (21.30%) disagree and 119 (30.91%) remain uncertain. Approximately half of the respondents, 194 (50.39%), agreed that the Rhesus factor impacts pregnancy and

childbirth, while 79 (20.52%) disagreed, and 112 (29.09%) were unsure

TABLE 3: The Perception of the Implication of Rhesus Incompatibility on the Choice of Marriage Partner

The data reveals that the majority of respondents, 297 (77.14%), do not consider their Rh Factor when selecting a partner for a serious relationship, while 71 (18.44%) do. Additionally, 146 (37.92%) believe the Rh factor system can impact the success of a long-term relationship, but a larger group, 182 (47.27%), disagrees, and 57 (14.81%) are unsure. About half, 193 (50.13%), think it can help understand individual personality traits, while 108 (28.05%) do not, and 84 (21.82%) remain undecided. Only a small percentage, 82 (21.30%), use the Rh factor system for personal decision-making, whereas most respondents, 263 (68.31%), do not. Lastly, 149 (38.70%) consider it a reliable indicator of compatibility in relationship dynamics, but 151 (39.22%) disagree. Most respondents, 143 (37.14%),

agreed that considering the Rh factor system when choosing a partner for marriage or long-term commitment has potential benefits or drawbacks, while 134 (34.81%) disagreed. A majority, 163 (42.34%), believe the Rh factor system can

enhance understanding and communication between partners, whereas 138 (35.84%) do not, and 84 (21.82%) remain uncertain.

Table 4: Level of knowledge

The majority of the respondents, 268 (69.61%) had poor knowledge about Rh incompatibility, while only 117 (30.39%) had good knowledge.

Table 5 shows no significant association between the gender of respondents and knowledge of rhesus incompatibility among public secondary school students in Ogbomosho, Oyo State. (P-value 0.107) .

Table 6: Association between class knowledge of rhesus incompatibility

Table 6 above shows no significant association between the class of respondents and their level of knowledge of rhesus incompatibility (P-value = 0.911).

DISCUSSIONS

The majority of the respondents, 268 (69.61%), in this study had poor knowledge about Rh incompatibility, while only 117 (30.39%) had good knowledge.

Regarding the socio-demographic, the majority of respondents were female and more than half were under the age of 18. Given that Ogbomosho is a community dominated by Yoruba and the majority of the students are Christians, it is plausible that the majority of the pupils were Yoruba.

The survey found that most students (68.83%) were unaware of the Rh blood group system or its significance for blood transfusions and pregnancy. This finding is similar to that of Ogbenna et al., who similarly observed that the awareness of their student body was comparatively low. (1)Only a small portion of the respondents had heard of Rh incompatibility before, with 80.26% having never heard of it. Of the respondents, 66.49% were unaware of the risks associated with Rh incompatibility during pregnancy. 227 (58.96%) of the respondents are not aware that Rh incompatibility can affect a baby's health. 323 (83.90%) are interested in learning more about the repercussions of Rh incompatibility. The results show that most students are generally unaware of Rh incompatibility and how it influences the choice of spouse.

The finding is similar to Ogbenna who assessed the level of

awareness of own Rh D blood group status among female secondary school students, their risk for alloimmunisation, the distribution of Rh D antigen and the burden of alloimmunisation. The study was carried out among 927 female secondary school students in Ikorodu, Lagos, South-West Nigeria was performed(1) The study observed poor awareness/knowledge regarding the Rh (rhesus) blood group system among secondary school females in Ikorodu Local Government Area of Lagos State, Nigeria. Efforts should be directed at improving the awareness/knowledge of the rhesus blood group system and its reproductive implications, particularly among female secondary students. This is in tandem with what was obtained in this study, where the majority of the respondents, 268 (69.61%) have poor knowledge, while only 117 (30.39%) had good knowledge about Rh incompatibility. This finding is similar to that obtained by Oyeyemi et al. on assessing health education students' knowledge of sickle cell and Rhesus factor incompatibility at the University of Ilorin. ()

The study shows that the majority of the students, 297 (77.14%) do not consider their Rh Factor when choosing a partner for a serious relationship. This implies that the

majority of the respondents do not consider the Rh system in choosing a marriage partner.

This is similar to a retrospective institution-based study conducted by Aliyo et al, among 110 women who delivered in that facility where the mothers were mostly Rh-negative women, who did not know the impact of the rhesus incompatibility on them and their babies. This may be due to a lack of knowledge before marriage and pregnancy. This shows the need for educational interventions among students and the general populace on the importance of rhesus compatibility.

The study revealed that most of the students have a low level of knowledge, and also do not know the implications of rhesus incompatibility on marriage partner choice. The students believed that educational interventions would improve their knowledge and help them make better choices.

Conclusion

Since intended couples must be compatible to avoid issues that could arise from Rhesus incompatibility, it can be inferred that Rhesus compatibility plays a significant role in partner selection. The results of this study, however, show a lack of understanding regarding Rhesus incompatibility and how it

affects mate selection. Therefore, it is important that secondary school students understand the ramifications of a partner's blood grouping system before getting married and starting a family.

Limitations of the study

The study is a community-based study conducted in Ogbomoso. A national study will be required to be able to make a generalization. Limited previous studies and materials on the research topic.

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TABLES AND FIGURE

Table 1: Respondents' Socio-demographic Characteristics

Variable	Frequency(n)	Percentage (%)	Mean
Age group			
<18	349	90.65	15.65 ± 1.76
>18	36	9.35	
Gender			
Female	234	60.78	
Male	151	39.22	
Religion			
Christianity	343	89.09	
Islam	37	9.61	
Traditional	5	1.30	
Class			
SS1	65	16.88	
SS2	282	73.25	
SS3	38	9.87	

Table 2: Respondents' Knowledge of Rhesus Incompatibility

QUESTIONS	YES (%)	NO (%)	MAYBE (%)
Do you know your own Rh D blood group status?	86 (22.34)	284 (73.77)	15 (3.90)
There are eight main blood groups in the Rh factor system	160(41.56)	104 (27.01)	121 (31.43)
Is the Rhesus factor related to the blood group?	192 (49.87)	90 (23.38)	103 (26.75)
Are there antigens and antibodies associated with the Rh factor system?	157 (40.78)	95 (24.68)	133 (34.55)
Can the Rh blood system influence susceptibility to certain diseases?	184 (47.79)	82 (21.30)	119 (30.91)
Does the Rhesus factor impact pregnancy and childbirth?	194 (50.39)	79 (20.52)	112 (29.09)

Table 3The Perception of the Implication of Rhesus Incompatibility on the Choice of Marriage Partner

VARIABLE	YES (%)	NO (%)	MAYBE (%)
Have you ever considered your Rh Factor when choosing a partner for a serious relationship?	71 (18.44)	297 (77.14)	17 (4.42)
Do you think that the Rh factor system can influence the success of a long-term relationship?	146 (37.92)	182 (47.27)	57 (14.81)
Do you think the Rh factor system can be used as a tool for understanding individual personality traits or characteristics?	193 (50.13)	108 (28.05)	84 (21.82)
Have you ever used the Rh factor system as a basis for making decisions in your	82	263	40 (10.39)

personal life (e.g., choosing a friend or partner)?	(21.30)	(68.31)	
Do you believe that the Rh factor system can be a reliable indicator of compatibility between partners in terms of their relationship dynamics?	149 (38.70)	151 (39.22)	85 (22.08)
Are there any potential benefits or drawbacks to considering the Rh factor system when choosing a partner for marriage or long-term commitment?	143 (37.14)	134 (34.81)	108 (28.05)
Do you think the Rh factor system can be used to promote better understanding and communication between partners?	163 (42.34)	138 (35.84)	84 (21.82)

Table 4: Level of knowledge

Knowledge	Freq.	Percent
Good	117	30.39
Poor	268	69.61

Table 5: Association between Gender and knowledge of Rhesus Incompatibility

GENDER	Good knowledge	Poor knowledge	p-value	Df	X ²
MALE	53(45.30)	98(36.57)	0.107	2	2.605
FEMALE	64(54.70)	170(63.43)			

Table 6: Association between class knowledge of rhesus incompatibility

CLASS	Good knowledge n (%)	Poor knowledge n (%)	P-value	Df	X ²
SS1	21(17.95)	44(16.42)	0.911	1	1.187
SS2	84(71.79)	198(73.88)			
SS3	12(10.26)	26(9.70)			