Predictors of knowledge and management practice of Rhesus negative pregnant women among primary health care workers in Kano, Nigeria

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Abstract

Rhesus isoimmunization present significant medico-social problems among rhesus negative women that could be prevented by adopting correct management practices by healthcare providers. This study assessed the predictors of knowledge and management practices of rhesus negative pregnant women among Primary healthcare workers in Kano Metropolis. A descriptive cross-sectional study was used to study 424 respondents selected using multistage sampling technique with a response rate of 94%. Data was collected using self-administered semi-structured questionnaire and analyzed with IBM SPSS for Windows, Version 22. Majority of the respondents 354 (88.9) were greater than 24 years of age with mean age of 32.8±7.1. More than one-half 235 (59.0%) of the respondents were female with Hausa speaking respondents by tribe constituting the majority 322 (80.9) healthcare workers studied. Almost two-thirds (62.3%) of the respondents had good knowledge. However, only 24 (6.0%) employed correct management practice of rhesus negative pregnancy. Senior staff studied were 60% more likely {AOR=0.6, 95% CI (0.3-0.9)} to have good knowledge of rhesus negative pregnancy with those in service for 5 or more years to had 2.8 increased likelihood AOR=2.8, 95%CI (1.7-4.7)} of having good knowledge of Rhesus negative pregnancy. Healthcare workers requesting for blood grouping during ANC services provision were found to have up to 5.2 increased likelihood {AOR=5.2, 95% CI (2.7-10)} of having good knowledge of managing rhesus negative pregnancy. Senior staff were found to be 37% more likely to correctly practice the recommended management of Rhesus negative pregnant women {AOR=0.37 , 95%CI= (0.2-0.9)}. Most healthcare workers had good knowledge of rhesus negative pregnancy but wrong management practices. Government should ensure improved practice by putting in place favorable policies that will ensure training and compliance with recommended guideline for managing rhesus negative pregnant women.

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Introduction

Rhesus disease accounts for 97% of hemolytic disease of the newborn (HDN) which is preventable when measures to prevent feto-maternal hemorrhage in Rh negative pregnancy, antenatal and post-natal immunoprophylaxis with anti-D immunoglobulin are practiced correctly.[1] Health care providers offering antenatal care services, abortion, post-abortion and postnatal care to rhesus negative pregnant women should therefore know and offer appropriate interventions to prevent isoimmunization by giving Rho (D) immune globulin because, once sensitization has occurred, no amount of RhoGAM (Rho (D) immune globulin)will stop the disease from occuring.[1]

The Rhesus D negative phenotype is low among Africans, about 3.9% in Kenya, 4.1% in Guinea, 2.4% in Cameroon and 4.4% in Nigeria,[2] central attributes of primary health care services are accessibility, continuity and client-focused preventive and curative care. The team deals with detection of early signs and symptoms and combines curative and preventive services.[3] This highlighted the importance of early detection and commencing preventive measures of rhesus isoimmunization at primary healthcare level.

Human resources for health at PHC level should have optimum knowledge on prevention and management of rhesus disease and this will help a long way in reducing the occurrence of Hemolytic disease of new born and its associated consequences.[4,5]

Rhesus isoimmunisation is under studied among Nigerian women and healthcare providers with many questions unanswered in the few studies conducted suggesting the need for management protocol nationwide for this condition to appropriately guide health care providers at various levels,[6] as the management of women who are Rhesus negative pregnant women has evolved and therefore all pregnant women should be typed and screened for alloantibodies, with an indirect anti-globulin test at the first prenatal visit and again at 28 weeks.[7]

Antenatal management of Rh-negative pregnant women in Sub-Saharan Africa is suboptimal. There are several health system challenges which includes poor socioeconomic status, lack of adequate qualified staff, inadequate referral services and shortage of supplies.[8]

Management with anti-D prophylaxis is expensive and difficult to access in Sub Saharan Africa. Beyond the challenge of access to anti-D prophylaxis, there is lack of alloimmunization prevention during illegal abortions and poor documentation of adequate information in patient's medical notes.[2] A previous report in Singapore indicated that although obstetricians offer anti-D prophylaxis to Rhesus negative women who experience a potentially sensitizing

event as recommended by the guidelines, not every Rhesus negative woman would have this treatment because of cost.[2] There is paucity of data on the incidence of Rhesus isoimmunisation in subsequent pregnancies, adverse events or neonatal morbidity.[9]

Hydrops fetalis reduces the chance for a viable outcome by up to 11%, and neonatal and infant outcomes are complicated by the need for repeated transfusions secondary to suppressed erythropoiesis.[10] Primary health care workers are the first level of contact for preventive and curative services for these pregnant women and therefore need to have good knowledge in the diagnosis and appropriate practices in the management or referral for better pregnancy outcome. This study was aimed to assess the predictors of knowledge and management practices among primary healthcare workers in Kano, Nigeria.

Materials and Methods

Study area

Kano is bounded by Jigawa and Bauchi on the East, Plateau and Kaduna states on the south and West respectively, and Katsina State on the North. It is located on longitude 8°31'0.19" E and latitude 12°00'0.43" N. Its densely populated old city is surrounded by 22km long wall dating from 13th century. The city has a long tradition of commerce.[11]

The State Metropolis comprises of Local Governments that lies within the city and they include Kano municipal, Dala, Gwale, Fagge, Nassarawa, Tarauni, Ungogo and part of Kumbotso local government areas. They form the main center of trade and commerce. Based on the 2006 national census, the total population of Kano was 9,401,288. The projected population for 2016 was 13,076,700. Kano Metropolis, consist of eight local government areas which makes up about 30% (2016 projected population of 3,931,300) of Kano state population.[11]

The study was conducted in 34 primary health centers within Kano Metropolis that provides antenatal care, routine immunization, outpatient consultation and basic laboratory test services. Health workers providing these services are qualified primary health care Nurse, CHO (Community Health Officer), SCHEW (Senior Community Health Extension Worker), and JCHEW (Junior Community Health Extension Worker). These health care providers are trained to provide services based on the components of primary health care among which is maternal and child health care.

Study design

Descriptive cross-sectional study was used.

Study population

All the primary health care workers in Kano Metropolis that were employed more than or equal to 6 months and present at the duty post during the survey were included while healthcare workers who were on annual or sick leave were excluded from the study.

Sample size determination

Sample of up to 424 was obtained using Fisher's formula for determining minimal sample size for descriptive studies[12]

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

Based on standard normal (Z) deviate of 1.96 at 95% confidence interval, prevalence rate from previous study was found to be 49.1% = 0.491[13] degree of precision of (0.05) and 10% non-response rate.

Sampling technique

A three-staged sampling technique was used for selection of eligible respondents. At first, list of all the LGAs within the metropolis was obtained from which 4 LGAs representing 50% were randomly selected by balloting. At second stage, the list of the facilities in all the selected LGAs was obtained and 50% of the health facilities in each of the selected LGAs were randomly selected by simple balloting. At the third stage, in the selected health facilities, eligible respondents were proportionately allocated. Hospital staff registers were used to select respondents using the serial number of the hospital general register by balloting. The number obtained was traced and the healthcare workers bearing the serial numbers were interviewed.

Instrument and method of data collection

A pre-tested structured designed self-administered questionnaire consisting both opened and closed ended questions was used to collect data. The questionnaire consisted of three sections. The first section obtained information on socio-demographic characteristics of the respondents; the second section asked questions that assessed the respondent's knowledge of Rhesus negative blood, section three explored the management practices of Rhesus negative pregnant women among the respondents.

Advocacy visit was paid to all the hospital heads of the selected hospital and were briefed on the objectives of the research to obtain their permission and cooperation. Four research assistants were trained on the objectives of the study, distribution and retrieval of the questionnaires.

The instrument was pretested among 30 Healthcare workers in PHCs outside the metropolis.

Data management

Data was analyzed using IBM SPSS Statistics for Windows, Version 22. Quantitative variables were summarized using appropriate measures of central ten dency and dispersion while categorical variables were presented as frequencies and percentages. The dependent/outcome variables are knowledge of rhesus negative and management practice while the independent variables are age, academic qualification/ designation, tribe, marital status, type of facility, and delivery of pregnant women among others.

Up to 10 questions were asked to assess the knowledge of rhesus negative and 12 questions for management practice of rhesus negative pregnant women among the respondents. Correct answer to each question for knowledge of rhesus negative was awarded one point while wrong response was allocated a zero point. Scores of (0-4.9) was considered poor knowledge and (≥5) was considered as good knowledge of Rhesus negative pregnancy.[14] Management practice was equally allocated one point for any correct response and zero point for wrong responses. Management practice score of less than or equal to 5.9 was considered to be wrong practice and a score of ≥6 was considered to be correct practice.[14] Chi square test or Fishers exact test were used to test for significant association between categorical variables. Binary logistic regression was used to adjust for confounders. A P-value of ≤0.05 was considered significant. The criteria for inclusion of variable into the logistic regression model were "apriori variable", variables significant on bivariate analysis, and a set P≤0.2 for variables that were not significant in bivariate analysis.[15]

Ethical considerations

Ethical approval was obtained from Kano State Health Research Ethics Committee of Kano State Ministry of Health with approval number MOH/OFF/797/TI/786. Data was collected from 5th July to 20th September, 2018. All the principles of research ethics were respected throughout the conduct of the research. Consent form was used and

respondents indicated acceptance to participate in the study by signing the form.

Results

Socio-demographic characteristics of primary health care workers

The age of the Primary health care workers ranged from 19 to 51 years with a mean of 32.8±7.1. Majority of the respondents were Hausa/Fulani by tribe 382 (96%) with many being greater than 24 years of age. More than one half 235 (59%) were females. Junior community health extension workers constituted the majority 163 (41%) in relation to other category of Primary healthcare workers. The median duration in service was 6 years with about two-thirds 240 (60.3%) having spent five or more years in service. More than one-half of the respondents 232 (58.3%) works in Primary health centers. Majority of the healthcare workers studied 363 (91.2%) offers antenatal services to their clients but only 345 (86.7%) request for routine antenatal investigations to the pregnant women with 336 (84.4%) of them receiving deliveries. Of all the respondents that requested for routine antenatal investigations, only 286 (71.9%) request for at least blood grouping (Table 1).

Primary healthcare workers knowledge of rhesus negative pregnancy

The parameters used to assess the knowledge of managing rhesus negative pregnancy are summarized in Table 2. The knowledge score ranged from 0 to 8 with mean knowledge score of 5.1±2.0. Majority 248 (62.3%) of the respondents had good knowledge but more than one-quarters 150 (37.7%) had poor knowledge of managing rhesus negative pregnant women as shown in Figure 1. More than two-thirds 289 (70%) knew the importance of blood grouping but very few 4 (1%) were able to explain rhesus blood grouping as an independent blood grouping method and 237 (59.3%) knew about RhoGAM with only 142 (35.5%) able to mention the time required for administering it to prevent rhesus isoimmunization.

Primary healthcare workers management practice of rhesus negative pregnancy

The parameters used to assess the management practice of rhesus negative pregnancy are summarized in Table 2. The Minimum management practice score was 0 and the maximum was 10 with a range of 10 median of 1.6. Majority of the respondents 374 (94%) wrongly manage rhesus negative pregnant women as shown in Figure 1. Only 50 (12.5%) responded to sending pregnant women for blood grouping all the time, very few 9 (2.3%) of the respondents ever diagnosed rhesus negative pregnancy. More than one-quarters of the respondents requested for blood donation for safe keeping before delivery as shown in Table 1.

Discussion

The medico-social problems associated with hemolytic disease of newborn are numerous, and is a preventable disease when measures to prevent feto-maternal hemorrhage in Rh negative pregnancy when antenatal and post-natal immune-prophylaxis with anti-D immunoglobulin (Ig) are practiced correctly.[1]This emphasized the importance of having good knowledge on rhesus negative pregnancies which is key in ensuring correct management practices by healthcare workers especially at primary healthcare level.

It was found in this study that about two-thirds of the respondents had good knowledge of rhesus negative blood but majority wrongly managed the rhesus negative pregnant women. This corroborated the

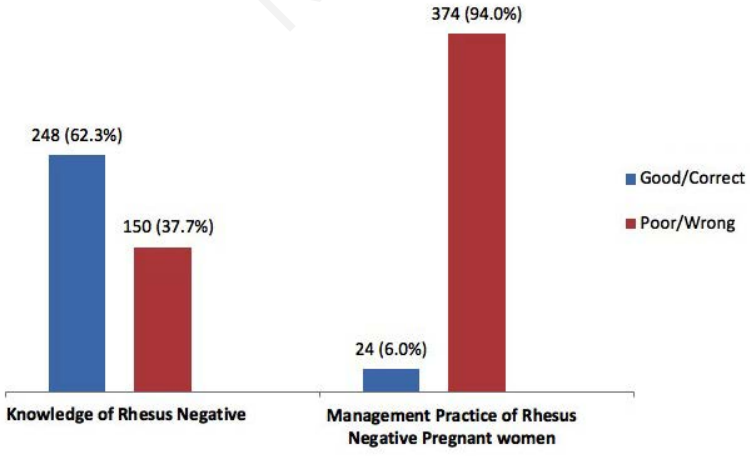

Figure 1. Distribution of knowledge of Rhesus negative and management practice of Rhesus negative pregnant women among primary health care workers.

Table 1. Socio-demographic characteristics of the respondents.

Variable	Frequency (n=398)	%
Age group		
18-24	44	11.1
>24	354	88.9
Gender		
Male	163	41
Female	235	59
Tribe		
Hausa	322	80.9
Fulani	60	15.1
Yoruba	7	1.8
Igbo	1	0.2
Others	8	2.0
Marital status		
Married	241	60.6
Single	130	32.6
Divorced	17	4.3
Widow	10	2.5
Designation/Qualification		
Nurse	10	2.5
CHO	69	17.3
SCHEW	82	20.6
JCHEW	163	41
Others	74	18.6
Number of years in service (years)		
1-4	158	39.7
≥5	240	60.3
Type of Facility		
PHC	232	58.3
CHC	59	14.8
Dispensary	32	8.1
Others	75	18.8
ANC Services		
Yes	363	91.2
No	35	8.8
ANC Investigation		
Yes	345	86.7
No	18	4.5
No ANC	35	8.8
Type of ANC Investigations		
None	112	28.1
At least Blood grouping	286	71.9
Deliver Pregnant Women		
Yes	336	84.4
No	62	15.6

Table 2. Parameters used to assess knowledge and management practice of Rhesus negative pregnant women among healthcare workers.

Knowledge of Rhesus negative	Frequency (%)	Management practice	Frequency (%)
Do you know about blood grouping system?	289 (70.0)	Have you ever diagnosed a Rhesus negative pregnant woman?	9 (2.3)
If yes how many types do you know?	118 (29.5)	Do you provide health education to pregnant women during ANC?	41 (10.3)
Do you know about Rhesus blood grouping system?	4 (1.0)	If yes, what is the area of emphasis for women with Rhesus negative blood?	66 (16.5)
Rhesus blood group can be categorized into?	231 (57.8)	Do you test for blood group of pregnant women during ANC?	50 (12.5)
Does women with Rhesus negative blood faces any danger during pregnancy?	376 (94.0)	If yes, what do you do when you get a Rhesus negative pregnant woman?	29 (7.3)
If yes what danger(s) do they face?	124 (31.0)	If the above answer is why?	45 (11.3)
What leads to development of these dangers in a Rhesus negative pregnant woman	300 (75.0)	When do you give RhoGAM?	71 (17.8)
What can you do to assist a Rhesus negative pregnant woman?	221 (55.3)	Do you request for blood donation for safe keeping before delivery by the relatives of Rhesus negative mother?	114 (28.5)
Do you know about RhoGAM?	237 (59.3)	Do you like attending to Rhesus negative pregnant women?	76 (19.0)
If yes, when is RhoGAM given to a Rhesus negative pregnant woman for prevention of rhesus iso-immunisation.	142 (35.5)	Have you attended to any Rhesus negative pregnant woman before?	40 (10.0)
		Have you ever referred a Rhesus negative woman to another facility?	33 (8.3)
		If yes, how often do you refer a Rhesus negative woman to other facilities	79 (19.8)

Table 3. Predictors of primary health care workers knowledge and management practice of Rhesus negative pregnant women.

Variable	Knowledge			Logistic regression		Management practice			Logistic regression	
	Poor	Good	P-value (χ^2)	AOR (95%CI)	P-value	Wrong	Correct	P-value (χ^2)	AOR (95%CI)	P-value
Age group										
18-24	21(47.7)	23(52.3)				44(100)	0(0)			
>24	129(36.4)	225(63.6)	0.1	0.6(0.3-1.3)	0.2	330(93.2)	24(6.8)	†0.09		
Gender										
Male	51(31.3)	112(68.7)								
Female	99(42.1)	136(57.9)	0.03*	0.5(0.3-0.9)	0.012*					
Tribe										
Hausa	143(37.4)	239(62.6)				358(93.7)	24(6.3)			
Others	7(43.8)	9(56.3)	0.6			16(100)	0(0)	†0.6		
Marital status										
Married	86(35.7)	155(64.3)				223(92.5)	18(7.5)			
Unmarried	64(40.8)	93(59.2)	0.3			151(96.2)	6(3.8)	0.2	0.7(0.27-1.9)	0.5
Designation/Qualification										
Senior staff	45(28.0)	116(72.0)				145(90.1)	16(9.9)			
Junior staff	105(44.3)	132(55.7)	0.001*	0.6(0.3-0.9)	0.028*	299(96.6)	8(3.4)	0.01*	0.37(0.2-0.9)	0.028*
Number of years in service										
1-4	81(51.3)	77(48.7)				152(96.2)	6(3.8)			
≥5	69(28.7)	171(71.3)	0.000*	2.8(1.7-4.7)	0.000*	222(92.5)	18(7.5)	0.1		
Type of Facility										
PHC	76(32.8)	156(67.)								
CHC	17(28.8)	42(71.2)								
Dispensary	24(75.0)	8(25.0)	0.000*	1.0(0.8-1.2)	0.9					
Others	33(44.0)	42(56.0)								
ANC Services										
Yes	122(33.6)	241(66.4)				339(93.4)	24(6.6)			
No	28(80.0)	7(20.0)	0.00*	0.4(0.1-2.8)	0.4	35(100)	0(0)	†0.3		
ANC Investigation										
Yes	112(32.5)	233(67.5)								
No	10(55.6)	8(44.4)	0.000*	1.3(0.4-4.2)	0.6					
No ANC	28(80.0)	7(20.0)								
Type of ANC Investigations										
None	75(67.0)	37(33.0)								
At least Blood grouping	75(26.2)	211(73.8)	0.000*	5.2(2.7-10)	0.00*					
Deliver Pregnant Women										
No	37(59.7)	25(40.3)				62(100)	0(0)			
Yes	113(33.6)	223(66.4)	0.000*	0.8(0.3-2.0)	0.6	312(92.9)	24(7.1)	†0.04		
Knowledge										
Poor						150(40.0)	224(59.9)			

*Statistically significant; AOR, Adjusted odds ratio; χ^2,Chi square; †, Fishers exact.

result from India in which the main cause of sensitization identified was lack of awareness particularly in rural areas where the mothers are not routinely tested for their ABO Rh blood group.[1]

This study found most primary healthcare workers greater than 24 years of age to had better knowledge of managing rhesus negative pregnant women, though more female respondents were studied, being a male was found to be a significant predictor of having good knowledge of managing rhesus negative pregnancy{AOR=0.5,95% CI=(0.3-0.9)}, this may be due to the fact that men in this setting are more likely to advance their educational qualification which was also found to be a significant predictor of good knowledge of managing rhesus negative pregnancy {AOR=0.6,95% CI= (0.3-0.9)} and participation in workshops outside the state may improve their knowledge (Table 3). Implementation of a program of routine antenatal anti-D prophylaxis (RAADP) has led to a significant decline in the numbers of women becoming sensitized in most developed countries, good number of women who are not lucky enough to have access in Sub-Saharan Africa continue to be affected.[2] A step towards achieving this, is good knowledge of the condition and ensuring compliance with correct practice

In addition, healthcare workers who have being in service for five or more years were better in terms of knowledge of managing rhesus negative pregnancy and were 3 times more likely to have good knowledge when compared with those that were less than 4 years in service {AOR=2.8, 95% CI (1.7-4.7)}, this may be explained by the possibility of receiving training that could improve their knowledge. There was a statistically significant association between working in primary healthcare center and having good knowledge of managing rhesus negative pregnant women (P<0.001),this may be due to employment and placement of higher cadre primary healthcare workers compared to other facilities at Local government level.

Conducting at least blood grouping during antenatal services was found to be a significant predictor of having good knowledge of managing rhesus negative pregnancy {AOR=5.2, 95% CI= (2.7-10)}, this may not be unconnected with information, education and communication that is expected to be regularly conducted to ensure blood safety and avoidance of blood transfusion reaction in all centers that offer blood grouping and transfusion services. There was also statistically significant association between taking deliveries in the facilities and having good knowledge of managing rhesus negative pregnancies (P<0.001).

There are differences in local circumstances among countries, both in respect to the organization of their health systems and the availability of resources to deliver the recommended interventions. Furthermore, differences also exist in the composition and training of health care personnel in the area of managing their patients,[4] The curriculum of senior healthcare workers at primary healthcare level consist of reproductive health component that is involved in ensuring the concept of safe motherhood ,in that line, this study identified that being a senior staff (CHO, Nurse, and SCHEW) was a significant predictor of correct management practice of rhesus negative pregnancy {AOR=0.37, 95%CI= (0.2-0.9)} and there was a statistically significant association between having good knowledge and correct practice of managing rhesus negative pregnant women (P<0.001).This study is limited by paucity of local literatures that studied predictors of knowledge and management practices of rhesus negative pregnant women among Primary healthcare workers.

Conclusions

Good knowledge was significantly associated with correct practice of managing rhesus negative pregnancy. Healthcare workers should ensure that all the necessary investigations are conducted including blood grouping during routine antenatal visits to identify Rhesus negative pregnant women and correctly manage the condition to prevent Rhesus isoimmunization. In addition, government should ensure training and adherence to Antenatal care guideline by all the healthcare workers with respect to correct management of Rhesus negative pregnant women.

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