EFFECT OF HEALTH EDUCATION INTERVENTION ON KNOWLEDGE OF DANGER SIGNS OF PREGNANCY AMONG MARRIED MEN IN RURAL NORTH-WESTERN NIGERIA

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ABSTRACT

Background: Good knowledge of danger signs of pregnancy has been shown to reduce delay in deciding to seek obstetric care.

Objectives: This study was conducted to assess the effect of health education intervention on knowledge of danger signs of pregnancy among married men in a rural community in north-western Nigeria.

Methods: It was a quasi-experimental study in which 205 and 206 married men were enrolled into study and control groups respectively. **Data were collected from both groups.** Thereafter, a health education intervention was carried out among the study group consisting of interactive workshop, filmshow and discussion, distribution of almanac carrying messages on male involvement in pregnancy care. Six months after, a post-intervention survey was carried out among both groups. Data was analyzed using SPSS Statistics 17.0.

Results: Prior to the intervention, both study and control groups showed low knowledge of danger signs of pregnancy. After the intervention, the study group showed statistically significant increase in knowledge of danger signs of pregnancy, while the increase in the control group was not statistically significant.

Conclusion: The intervention was able to increase knowledge of danger signs of pregnancy among the men studied. It was recommended that this intervention should be tested in large scale, because it has the potential to reduce delay in accessing maternal care, thereby reducing deaths due to complications of pregnancy.

Key words: Health promotion intervention, danger signs, married men, northern Nigeria

INTRODUCTION

In Nigeria, for every 100,000 livebirths, up to 545 women die of pregnancy-related causes bringing the annual maternal deaths to about 28,700. For each of these maternal deaths, about eighteen other women experience various forms of morbidities, some with long-term complications. Studies have reported that majority of these maternal morbidities and mortalities occur as a result of direct causes like severe bleeding, hypertensive diseases and infections. Death

from these direct causes are mainly worsened by delay in recognising them when they occur. Thus, delay in recognising that a pregnant woman is experiencing a complication of pregnancy can be reduced by improving knowledge of obstetric danger signs.

Good knowledge of danger signs of pregnancy has been shown to reduce the delay in deciding to seek obstetric care. The establishment of elements of home and client birth preparedness is an important strategy that has been proposed

to ensure this continuum of care.

Despite this realisation, knowledge of danger signs of pregnancy has been reported to be low in northern Nigeria. For example, while a study conducted among men and women in Benin in southern Nigeria reported knowledge of various danger signs mostly ranging from 95.6% to 100%, a similar study among women in three northern Nigerian states reported only a range of 0.3 to 42.6%. Also, a study among married men in a northern Nigerian community reported

knowledge of various danger signs to be from 4.1 to 51.9%. Because patriarchy gives men the power to influence their wives access to and utilization of maternal health services, increasing men's knowledge of danger signs of pregnancy causes improvement in their participation in birth preparedness, thereby, reducing the delay in accessing maternal care by women. It is, therefore, necessary to explore locally applicable strategies for improving knowledge of danger signs of pregnancy among married men in northern Nigeria. For this reason, this study aimed to assess knowledge of danger signs of pregnancy among married men of Dinya community in rural northern Nigeria, and to assess the effect of health education intervention on knowledge of danger signs of pregnancy among them.

METHOD

Dinya and Garu are both rural communities with populations of 6206 and 4842 respectively, and are located in Soba and Kudan Local Government Areas of Kaduna State in north-western Nigeria. Each of them is about 30km from Zaria, the former capital of the Hausa kingdom of Zazzau and they are about 43km apart. They are inhabited predominantly by Hausa-Fulani Muslims and governed by a local government council and a strong traditional institution commanding greater respect from the people. Both communities have access to mobile telephone network, radio and television services,

and there are few individuals in the communities who either owned satellite television or had access to watching it. There are untarred access roads leading into the two communities, and their referral health centres are general hospitals; the one for Garu is about 10-12km away while the one for Dinya is about 45km away. The major maternal health services rendered by the primary health care centres within each facility are antenatal care and patient referral. In addition, they offered occasional normal delivery and family services, the latter on demand.

The design was quasi-experimental, with pre- and post-intervention components. The study population included all married men who were presently living in the same home with their wives, and who had lived in Dinya (the study community), and Garu (the control community) in the past three years. Any man whose wife had not been pregnant in the last three years preceding the pre-intervention survey was excluded from the study.

Data collection was done using a structured and coded interviewer-administered questionnaire containing close-ended questions. Apart from socio-demographic characteristics of the participants and their wives, the questionnaire also contained seven questions to assess the knowledge of danger signs of pregnancy; bleeding from vagina, fits, high blood pressure, fever (high body temperature), anaemia (paleness and weakness), severe headache,

dizziness and/or blurred vision. The data collection was done by a team of 10 male research assistants; six junior resident doctors and four community health officers. All of them were fluent in the local language, Hausa. It was done concurrently in the study and control communities over five days; under the supervision of one supervisor in each community, who checked each completed questionnaire for completeness and consistency. A three-component behavioral intervention was carried out for all the participants in the study community- Dinya. It lasted for one month in which an interactive workshop for the participants was done and a film that highlights a number of reproductive health issues including the role of men in pregnancy care was shown to them, all for a total of eight days; two consecutive days per week for four consecutive weeks. In addition, almanacs were distributed to all participants. Below is a detailed explanation of the activities.

Workshop: Each session lasted for about three hours. It was done according to a training module designed by the researcher, and mostly adopted from *Training of Traditional Healers; Facilitator's Guide* and adapted to fit the objectives and audience of this workshop. It contained sections on spousal communication, joint decision making, husband's presence at antenatal care, male involvement in household chores, and male involvement in birth preparedness. The module was pretested in Bomo by simulating the workshop

over a period of two days. In this, there were 12 participants (the same ones who served as respondents in the pretesting of questionnaires). The module did not require significant adjustment after pretesting. Participants were divided into three equal groups, and all groups had their separate sessions on the same day, one after the other. This division was to ensure adequate sitting space and ease of interaction. There were a total of five sessions in four weeks; one session on the first day of each training week for four consecutive weeks, with an extra session that was held on the second day of week one.

For each session, one of the facilitators (with the aid of the others) gave an interactive presentation in the local language with the aid of cardboards and public address system. Refreshment was also provided towards the end of each session, in order to foster commitment of participants so that they would not have to leave the workshop in order to search for what to eat. A challenge experienced by the team was that some participants wanted to attend more than one session.

Film show and discussion: This had four sessions with each session holding on the third day of week one and on the second days of weeks two, three and four. Each session lasted about three hours: a one-hour Hausa film titled *Buri Na* (My Desire) was shown to the participants, followed by an-hour discussion that was based on a discussion guide that had been developed along with the

film by Johns Hopkins School of Public Health/Centre for Communication Programme (JHSPH/CCP). *Buri Na!* (My Desire!) was a local video that provided maternal health information through an entertaining story that taught the relevance of husband and wife engaging together in various practices of pregnancy care, including birth preparedness.

Almanac: An almanac of the Islamic calendar of the current year that carried male involvement messages in Hausa language was given as a souvenir to each participant at the first training session. It was also made freely available by keeping it at the front of the hall during each of the remaining sessions. This was meant to continuously reinforce the intervention message.

All the components of the intervention were delivered by the researcher, with the support of the field supervisors and research assistants mentioned above.

Follow-up: Between the intervention and post-intervention surveys, the researcher's mobile telephone line was used to maintain contact with participants, community leader, and leader of the community development associations; only in the study community. Periodic visits were also carried out to the community by the researcher to answer questions, and clear any doubts on the content of the intervention that was done, and on matters that bordered on

male involvement in pregnancy care.

Six months after the intervention, a post-intervention survey was carried out that lasted five days in both study and control communities. It was done using the same sample size, sampling technique, data collection tools and research team as for the pre-intervention survey.

The data collected was analysed using SPSS Statistics 17.0. Variables were tabulated using frequencies and percentages, and mean and standard deviation were calculated for age of participants, number of living children and number of wives. In the computation of the outcome variable, knowledge of danger signs, a participant was considered to have good knowledge of danger signs if he mentioned at least four out of the seven danger signs that were listed. Further, the change in knowledge of danger signs for each community was assessed by comparing the pre-intervention level with the post-intervention level, and statistical significance of the difference between these levels was assessed using Chi-square test at $p \leq 0.05$.

RESULTS

In the pre-intervention survey, a total of 205 men in study community and 206 in control community married men were successfully interviewed. In the post-intervention survey, a total 192 in the study community and 196 in the control community were successfully interviewed.

Table 1 shows the socio-demographic characteristics of the participants. There was no statistically significant difference in the socio-demographic characteristics of the participants in the study and control groups. At pre-intervention, knowledge of danger signs was low among participants of study (10.2%) and control (11.2%) groups. There was no statistically significant difference in the knowledge of danger signs between the participants of the two groups (Table 2). In the study group, the knowledge of danger signs of pregnancy increased from 21 (10.2%) at pre-intervention to 113 (58.9%) at post-intervention, and this was statistically significant. In the control group, it increased from 23 (11.2%) at pre-intervention to 25 (12.8%) at post-intervention, but this was not statistically significant (Table 3). There was more increase in awareness of vaginal bleeding, anaemia, fits and fever as danger signs of pregnancy. However, less increase was observed in awareness of high blood pressure and dizziness as danger signs of pregnancy (Figure 1).

DISCUSSION

Male involvement (MI) in pregnancy care refers to all the care and support that men give to their partners who are pregnant or experiencing the outcome of pregnancy in order to avoid death or disability from complications of pregnancy and child birth. It is important because the factors that cause death or disability from complications of

pregnancy and child birth include social and cultural practices like patriarchy. Although, having good knowledge of danger signs of pregnancy by husbands cannot on its own take the place of the practice of birth preparedness, past studies had taken it as an index of birth preparedness, and had included it in the assessment of birth preparedness. Similarly, it was included in this study not as an indicator of practice, but as a measure of the readiness of men to help in the reduction of the first delay in the delay model of maternal mortality. Pre-intervention, only a small proportion (10.2 and 11.2%) of the participants had good knowledge of danger signs of pregnancy, which was low when compared with the 19.0% reported in a study done in Pakistan and the 28.2% in another study done in India. But it is worth noting that while this study required knowledge of at least four out of the listed seven danger signs to categorize a participant as having good knowledge, the two cited studies required knowledge of only one out of seven, and this could have caused a false high level to be observed in the cited studies. However, the finding here could still be explained by the influence of some determinants among the participants such as low level of education, and Islamic religion. But this finding seemed to contradict the claim by about one-third of participants to have been present at their wives' ANC because the expectation was that men who were present at their wives' ANC should show

good knowledge of danger signs. Such contradiction could have been because of the low quality of ANC and lack of provision for husbands who were present at ANC with their wives to be included in the care, a missed opportunity for health care providers to educate husbands who had availed themselves by being present at their wives' ANC. This highlights the unmet need for ANC services to be expanded to cater for husbands who accompany their wives for such services.

Looking at the various items listed as danger signs, vaginal bleeding and anaemia were the most commonly mentioned danger signs of pregnancy and severe headache and high blood pressure were the least mentioned. Considering the low level of education among the participants in this study (about 8.0% did not attend secondary school and over 50.0% did not have any formal education), it is likely that vaginal bleeding turned out as the most commonly mentioned sign among them because it was an obvious sign, and unlike fits (which was also an obvious sign) could have been more easily associated with pregnancy and delivery because of its location in the birth canal. This is the most likely reason why the finding in this study was different from that of previous studies: the study in Ife, Nigeria in which close to 80% had formal education, hypertension was the most commonly mentioned danger sign; the study in Pakistan in which more than 80.0% had formal education, fever and abdominal pain were the most commonly

mentioned; a study in India in which more than 70.0% had formal education, and vaginal bleeding and fever were the most commonly mentioned. Fits, despite being physically visible, was the fifth most commonly mentioned sign among the participants in this study, most likely because of its lack of obvious association with the birth canal or other reproductive organs.

After the intervention, knowledge of danger signs of pregnancy increased by 48.7% (10.2% to 58.9%), and this was a statistically significant and relatively large increase because an earlier programme that was implemented in a northern Nigerian community only recorded 19.9% increase in a period as long as five years. The assessment of knowledge of danger signs done in this earlier programme was not complete because it only required a participant to be aware or unaware of severity of their pregnancy complication, and the outcome of the study was determined through a hospital-based survey among a population of women who had presented with pregnancy complications. Moreover, the programme also had more demanding and more expensive component interventions such as; separate **information sessions for men, women and community leaders, improvements in maternal health services by supporting the infrastructure, credit facilities for women who needed money to start a business to support themselves. All these factors put together imply that the**

intervention in this study is more cost-effective than the one in the cited programme.

Furthermore, when the separate indices that were used to assess knowledge of danger signs were assessed after the intervention, the highest scores were seen with vaginal bleeding (85.4%) and anaemia (73.4%). Both vaginal bleeding and anaemia already recorded the highest at pre-intervention, a reason why despite the change in them not being marked they still ended up as the most commonly mentioned post-intervention. As explained in the previous paragraph, it could have been the easiest thing for most participants (considering their low level of education) to have accepted and remembered vaginal bleeding as a danger sign of pregnancy after the intervention because of its location in the birth canal and the fact that bleeding from any part of the body is generally a feared symptom in most communities. The fact that anaemia was the second most commonly mentioned danger sign could have been because of the awareness that it resulted from excessive bleeding. High blood pressure (9.7% increase) and dizziness (27.8% increase) recorded the least increase even at post-intervention. This is because despite the intervention, both of them could still have been missed by the participants as danger signs of pregnancy because they had no apparent connection to the birth canal or other known reproductive organs.

Additionally, because high blood pressure was not a

symptom but a diagnosis that require a check with an instrument, it might not have been easily recognized by the participants who were laymen and mostly uneducated. Again, this brings to mind the need to improve the educational status of husbands in such communities as part of a long term plan to improve their involvement in pregnancy care.

In conclusion, prior to the behavioral intervention, both study and control groups showed unacceptably low levels of knowledge of danger signs of pregnancy. Following the intervention, only the study group showed significant increase in level of danger signs of pregnancy. It is, therefore, recommended that this intervention should be tested on a larger scale. This is because it has the potential of reducing the delay in recognising that pregnancy complication has occurred, thereby reducing the proportion of mortality that occur among pregnant women who develop a complication.

However, this study has its limitation. The responses to the questions were simply yes or no which may raise the possibility of willful misstatement. Moreover, participants in the study could have received information on the danger signs of pregnancy through some other means outside the intervention (e.g. radio and television programmes), which could have affected their knowledge of danger signs of pregnancy.

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Table 1: Distribution of socio-demographic characteristics of the men in study and control communities

Socio-demographics	Study group (N=205) n (%)	Control group (N=206) n (%)
Age (years)		
20-29	41 (20.0)	62 (30.1)
30-39	70 (34.1)	56 (27.2)
40-49	57 (27.8)	60 (29.1)
50-59	23 (11.3)	22 (10.7)
60 and above	14 (6.8)	6 (2.9)
Test statistics: $\chi^2 = 9.134$, df= 4, p=0.103		
Highest Level of Education		
None	21 (10.2)	15 (7.3)
Quranic	97 (47.3)	92 (44.7)
Adult education	15 (7.3)	13 (6.3)
Primary	34 (16.6)	31 (15.0)
Secondary	31 (15.1)	52 (25.5)
Tertiary	7 (3.4)	3 (1.5)
Test statistics: $\chi^2 = 8.324$, df=5, p = 0.139		
Occupation		
Unemployed	0 (0.0)	1 (0.5)
Petty trading	32 (15.6)	39 (18.9)
Civil service	14 (6.8)	13 (6.3)
Farming	137 (66.8)	126 (61.2)
Others	22 (10.7)	27 (13.1)
Test statistics: $\chi^2 = 3.083$, df=4, p=0.544		
Number of living children		
0-4	97 (47.3)	96 (46.6)
5-9	76 (37.1)	76 (35.9)
10+	32 (15.6)	36 (17.5)
Test statistics: $\chi^2 = 0.219$, df=2, p=0.896		
Present number of wives		
1	102 (49.8)	85 (41.3)
2	84 (41.0)	102 (49.5)
3	15 (7.3)	12 (5.4)
4	4 (2.0)	7 (3.4)
Test statistics: $\chi^2 = 6.377$, df=3, p=0.095		

Table 2: Pre-intervention knowledge of danger signs among study and control groups

Knowledge of danger signs	Study group Frequency (%)	Control group Frequency (%)
Good	21 (10.2)	23 (11.2)
Poor	184 (89.8)	183 (88.8)
Total	205 (205)	206 (100.0)
Test statistics: $\chi^2 = 0.091$, df=1, p=0.763		

Table 3: Comparison between pre- and post-intervention levels of knowledge of danger signs of pregnancy among study and control groups

signs of pregnancy among study and control groups				
Knowledge of danger signs of pregnancy	Study group		Control group	
	Pre-intervention level	Post-intervention level	Pre-intervention level	Post-intervention level
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Good	21 (10.2)	113 (58.9)	23 (11.2)	25 (12.8)
Poor	184 (89.8)	79 (41.1)	183 (88.8)	171 (87.2)
Total	205 (100.0)	192 (100)	206 (100.0)	196 (100)
Test statistics:	$\chi^2=104.771$, df=1, p<0.0001		$\chi^2=0.242$, df=1, p =0.623	

Figure 1: Comparison between pre- and post-intervention levels of individual indices used to assess knowledge of danger signs of pregnancy among study group