

Parents' Attitude to Abdominal Scarification as Therapy for Splenic Enlargement in Children: A Community-Based Study in Southern Nigeria

¹Omokhoa A. Adeleye and ²Peter F. Iyeikhian

¹Department of Community Health, University of Benin Teaching Hospital, Benin City, Nigeria

²Motayo Hospital Ltd, Ikeja, Nigeria

Abstract: This study was undertaken to assess the attitude gaps of parents regarding abdominal scarification of children as a treatment for splenic enlargement. The study was conducted in a rural community in southern Nigeria, a country that is stable and holoendemic for malaria. With a descriptive cross-sectional design, 262 parents of children at least 2-years old were selected using random clusters and participated in questionnaire-based interviews. The results showed that 76.7% of the respondents believed that abdominal scarification was effective in treating splenic enlargement and 64.9% had at least one child so scarified. Only 34.7% (91/262) stated fever (accepted as correct for a lay, low-literate population) as the cause of splenic enlargement; others stated evil spirits, witches, etc as causes. Lower educational levels were significantly associated with having a child with abdominal scarification [Logistic regression: $p = 0.034$; OR = 1.37 (95% CI = 1.06-3.34)]. Older age, but not lower education, significantly favored the opinion that splenic enlargement should be treated with abdominal scarification [Logistic regression: $p = 0.012$; OR = 2.04 (95% CI = 1.17-3.54)]. The study demonstrates the profoundness of the belief in the therapeutic value of abdominal scarification and the continued threat the act poses to child survival. Education on malaria and splenic enlargement and the right management are required at community levels and from early stages in schools.

Key words: Abdominal scarification, child mortality, malaria, Nigeria, splenomegaly, traditional medicine

INTRODUCTION

According to the 2010 World Malaria Report (WHO, 2010), about 225 million cases of malaria occurred in 2009, causing 781,000 deaths. Most of these occurred in Africa, especially in children under 5 years old.

In Nigeria, the disease is stable (high transmission occurs throughout the year) with peak transmission during the rainy season. The disease is also holoendemic (immunity in children is relatively low compared to adults). The spleen enlarges in affected children largely because blood pools in it in the process of sequestering malaria-parasitized red blood cells (Doherty and Mabey, 2004). The enlargement usually resolves spontaneously either after each episode of malaria or as the child's immunity builds up with repeated attacks of malaria and with age. Of course, malaria is not the only cause of splenic enlargement, but is by far the most common cause, particularly in Nigeria. No recent Nigerian survey is known to have assessed the percentage of children with splenic enlargement who have malaria (positive predictive value). But empirical clinical evidence indicates that, with the high spleen rate and malaria endemicity in the country, splenic enlargement accompanying acute fever in children 2-9 years old is attributable to malaria.

Splenic enlargement is strongly associated with malaria in places of high malaria endemicity (WHO and UNICEF, 2000; Doherty and Mabey, 2004).

With the converging challenges of poverty, misconceptions about malaria, insanitary environment, poor access to health services and drug resistance, traditional practices in response to malaria thrive. In Africa, traditional methods in the control of malaria include the burning of cow dung as a repellent (Ng'ang'a *et al.*, 2008) the ingestion of herbal extracts (Jombo *et al.*, 2010), and a wide range of similar and other remedies including scarifications (WHO, 2002; Ahorlu *et al.*, 2005; Fawole *et al.*, 2008; Oshikoya *et al.*, 2008)

Abdominal scarifications often consist of skin incisions over a palpably enlarged spleen in a child with fever. The practice is common in southern Nigeria where a recent community survey showed that, among children 2-9 years old, 35.6% had splenic enlargement and 77.4% had abdominal scarification (Wagbatsoma *et al.*, 2007). Splenic enlargement is sometimes perceived as a collection of bad blood in a child with fever or malaria, a separate disease entity (Wagbatsoma *et al.*, 2007; Ibadin *et al.*, 2008), a bag of worms or a disease caused by evil spirits (Ibadin *et al.*, 2008). It is also widely believed to be the cause of the malaria manifesting as

fever (Wagbatsoma *et al.*, 2007). The perception that the enlarged spleen has an abnormal content informs an incisional outlet on the skin for the content. This practice diverts attention from correct course of treatment and carries its own risks and complications (Ibadin *et al.*, 2008).

In the light of the above, this study was undertaken to identify and assess the knowledge, attitude and practice gaps of parents regarding abdominal scarification of children. This will hopefully demonstrate opportunities for behavior and change towards reducing childhood mortality. The findings were expected to add to the body of knowledge and scientific evidence on the research problem and to draw the attention of stakeholders to the need to initiate and sustain relevant interventions.

MATERIALS AND METHODS

Study place: The study was conducted in Illeh-Ekpoma, a rural community in Edo State, southern Nigeria. Standard oral antimalarials were available in the patent medicine stores. However, in the only health facility in the community, no free artemisinin-based combination therapy was being given to children (as with the rest of the local government area) and diagnostic facilities for malaria were unavailable. In some neighboring communities, health facilities with diagnostic and better-trained health staff were accessible by road within 15-20 min vehicular travelling time in the day time. Traditional healers, on the other hand, were resident and readily accessible all the time in the community. One of their therapies for splenomegaly in children was abdominal scarification. Some less common tropical causes of splenic enlargement, such as schistosomiasis and visceral leishmaniasis, are not known to have been reported in this community.

Study design: A descriptive cross-sectional design was used. The study population consisted of parents of children aged 2 years or more. To be eligible as a participant, the parent had decision-making power on their child's health sufficient to decide on whether or not the child should undergo scarification. A minimum sample size of 232 was computed, guided by the finding of 81.5% of participants in a previous study perceiving abdominal scarification as useful in reducing splenomegaly (Wagbatsoma *et al.*, 2007).

Cluster random sampling technique was used to select houses with eligible households. All consenting eligible individuals in the selected houses, one per household, were interviewed.

Institutional approval for the study was given by the Community Medicine Department of the Ambrose Alli University, Ekpoma, on behalf of the university. Ethical oversight was provided by the department as procedurally

required. The oversight ensured compliance with the Helsinki Declaration, amended 1975 to 2000 and updated 2002 to 2004 (WMA, 2008) and Nigeria's National Code of Health Research Ethics (FMOH and NHREC, 2007).

Data management: A structured questionnaire was designed to capture demographic variables of the respondents and their knowledge, perceptions and experiences about abdominal scarifications. Questions about experience were only with respect to their own children. Data on examined children were on the presence and locations of scarifications. The questionnaires were interviewer-administered. All data collected were entered into Stata/SE 10.0 for Windows (StataCorp, 2007) with which analysis with χ^2 tests and logistic regression were done. Regression was done with stepwise backward selection starting with respective models containing potential explanatory variables. The level of significance was taken to be 0.050.

RESULTS

A total of 262 respondents participated in the study. Table 1 shows that majority of the respondents were aged 19 to 40 years, Christians, females and Esan which is the indigenous ethnic group in the community.

There was no statistically significant difference between sex and the key variables studied. Table 2 shows that 74.1% (194/262) of the respondents opined that splenic enlargement should be treated with abdominal scarification, and 76.7% (201/262) believed that that treatment was effective. The proportions of respondents that had these opinions increased with age, but only the association between age and the opinion that splenic enlargement should be treated with abdominal scarification was statistically significant on chi-squared test. In both cases, however, age was a statistically significant explanatory variable on logistic regression analysis (Table 4).

Table 1: Demographic variables

Demographic variables	N = 262 (100.0)
Age in years¹	
19-40	174 (66.4)
41-60	72 (27.5)
61-80	16 (6.1)
Sex	
Female	184 (70.2)
Male	78 (29.8)
Educational level	
None	24 (9.2)
Primary	134 (51.1)
Secondary	85 (32.4)
Tertiary	19 (7.3)
Ethnic group	
Esan	235 (89.7)
Others ²	27(10.3)

1: Mean age = 38.8 years (12.5 years SD); Include Etsako, Ibo and Benin

Table 2: Associations with age

Variables	N = 262 (100%)	Age group in years			p-value
		19 - 40 n = 174 (100.0%)	41 - 60 n = 72 (100.0%)	61 - 80 n = 16 (100.0%)	
If splenic enlargement should be treated with abdominal scarification	Yes n = 194 (74.1) No n = 68 (26.0)	121 (69.5) 53 (30.5)	58 (80.6) 14 (19.4)	15 (93.8) 1 (6.3)	0.039 ¹
If treatment of splenic enlargement with abdominal scarification is believed to be effective	Yes n = 201 (76.7) No n = 61 (23.3)	127 (73.0) 47 (27.0)	59 (81.9) 13 (18.1)	15 (93.8) 1 (6.3)	0.086 ¹

1: Fisher's exact test

Table 3: Associations with educational level

Variables	N = 262 (100%)	Educational level				p-value
		None n = 24 (100.0%)	Primary n = 134 (100.0%)	Secondary n = 85 (100.0%)	Tertiary n = 19 (100%)	
If at least one of the children had abdominal scarification	Yes n = 170 (64.9) No n = 92 (35.1)	22 (91.7) 2 (8.3)	83 (61.9) 51 (38.1)	55 (64.7) 30 (35.3)	10 (52.6) 9 (47.4)	0.025
How splenic enlargement should be treated	Modern medicine n = 51 (19.5) Trado-medical methods n = 211 (80.5)	0 (0.0) 24 (100.0)	33 (24.6) 101 (75.4)	11 (12.9) 74 (87.1)	7 (36.8) 12 (63.2)	0.001 ¹
If treatment of splenic enlargement with abdominal scarification is believed to be effective	Yes n = 201 (76.7) No n = 61 (23.3)	24 (100.0) 0 (0.0)	100 (74.6) 34 (25.4)	66 (77.6) 19 (22.4)	11 (57.9) 8 (42.1)	0.003 ¹

1: Fisher's exact test

Table 4: Logistic regression

Variables	p-value	OR	95% CI of OR	
			Lower	Upper
Having at least one child treated with abdominal scarification [Yes/ No]				
Educational level [None/ primary/ secondary/ tertiary]	0.034	1.37	1.06	3.34
Correct knowledge of the cause of splenic enlargement [Fever/ others]	0.005	2.25	1.27	4.00
How splenic enlargement should be treated [Contemporary medicine/ traditional methods]				
Educational level [None/ primary/ secondary/ tertiary]	0.035	0.66	0.44	0.97
If splenic enlargement should be treated with abdominal scarification [Yes/ No]				
Age in years [19-40/ 41-60/ 61-80]	0.012	2.04	1.17	3.54
If treatment of splenic enlargement with abdominal scarification is believed to be effective [Yes/ No]				
Age in years [19-40/ 41-60/ 61-80]	0.028	1.89	1.07	3.33

OR: odds ratio; CI: confidence interval

Logistic regression analysis (Table 4) did not support the statistically significant association between educational level and the belief that abdominal scarification was effective (Table 3).

Table 3 shows that 64.9% (170/262) of the respondents had at least one child with abdominal scarification and 80.5% (211/262) believed that splenic enlargement should be treated with traditional methods. To a large extent, the proportions of respondents who had these characteristics reduced with increasing educational level. These associations were confirmed on logistic regression analysis (Table 4).

Only 34.7% (91/262) stated fever (accepted as correct for a lay, low-literate population) as the cause of splenic enlargement; 75.8% (69/91) of these compared to 59.1% (101/171) of those who stated other factors (evil spirit,

witches, etc) had at least one child with abdominal scarification (data not tabulated). This association was supported by logistic regression analysis (Table 4).

DISCUSSION

This study supports the fact that approaches to the treatment of malaria-related illnesses among Nigerians are usually influenced by the cultural inclinations of those who decide on their care (Jombo *et al.*, 2010).

It is worrisome that wrong and dangerous malaria-related beliefs persist in a country with an estimate of 4,295,686 cases of malaria resulting in 7,522 deaths in 2009 (WHO, 2010). Of particular concern is the fact that, even in the category of tertiary educational level which has best situation, more than half of the respondents

placed premium value on abdominal scarification both attitudinally and practically.

The existence of the majority of the respondents in the categories of primary level or no education is associable with poor health and poor health seeking behavior, often within a complex cycle that links poverty to poor health, and where child morbidity is associated with the educational level of caregivers (WHO, 2003; de Castro *et al.*, 2004; UNESCO, 2005; NMA, 2006; Abdulraheem, 2007; Ojikutu, 2010). This is consistent with the finding in this study where there was, approximately, an inverse relationship between educational level on one hand and preference for traditional methods of treatment of splenic enlargement and the belief that they were effective on the other. The role of general formal education is commonly understood as that of enabling better access to health information. The primacy of formal education as a key factor in this regard is corroborated by Ibadin *et al.* (2008).

The associations demonstrated with age, even against the confounding effect of educational level, are remarkable. They suggest that the older the respondent, the more the likelihood that therapeutic value was placed on abdominal scarification. This should be understood alongside the fact that literacy level has been increasing steadily over the years in Nigeria (NPC and ICF Macro, 2009) as also seen in the tradeoff between age and educational level in this study. It would seem that older respondents remained fixed on their long-held views, especially having passed the usual age ranges for secondary and tertiary education. Thus, the older they were, the less educable they probably became, at least with respect to appropriate choice of treatment for splenic enlargement. But there are instances in the literature where, unlike this study, parental age was not associated with health seeking behavior for self or children (Osubor *et al.*, 2006; Assefa *et al.*, 2008; Ndugwa and Zulu, 2008).

The consistent reversal of trend in the percentages of outcomes with respect to primary and secondary levels of education is difficult to explain. It is possible that, at the secondary level, study participants did not have sufficient access to relevant health information while more of them gained conviction about traditional methods. Another possible explanation is that some respondents with primary education may have exaggerated their disinclination towards traditional methods, such that their responses were what they considered praiseworthy rather than their true convictions or experiences.

An interesting finding was the fact that parents who knew "fever" as the cause of splenic enlargement were more likely to have a scarified child than others (who attributed it to evil spirits, witches, etc). Attribution of splenic enlargement to causes was elicited after the scarification. It is thus difficult to infer that the scarification was done despite the right knowledge. But

this could still be the case given the consistent attitude gaps as expressed in other variables. It is also possible that the right knowledge was gained after the wrong practice.

The overall concern is that probable cases of malaria in children are not being correctly treated; abdominal scarification is diversionary (Ibadin *et al.*, 2008) since it is ineffective for the intended purpose. This increases the risk of malaria morbidity, mortality and transmission. In addition, the scarification subjects the child to the important risk of HIV infection, blood-borne hepatitises (such as hepatitis B), tetanus, hemorrhage, local infection and hypertrophic scars at the site of the incision as both Wagbatsoma *et al.* (2007) and Ibadin *et al.* (2008) also noted. The procedure is also economically wasteful.

CONCLUSION

The study highlights the continued threat that abdominal scarification continues to pose to child survival. This is particularly worrisome because attitudes were poor across all educational levels. It demonstrates the profoundness of the underlying erroneous beliefs associated with splenic enlargement. The situation further draws attention to challenges that need to be overcome on the way to meeting the millennium development goals.

Some lessons emerge from the associations in this study. First, older parents are important immediate targets in health education aimed at correcting the identified knowledge, attitude and practice gaps. Their cultural positioning confers on them the important role of being household influencers. Secondly, given the high levels of poor attitude across all categories and the observed trend reversal at primary-secondary educational levels, it is crucial to commence health education on malaria at an early age and stage in school. Thus, the primary and secondary school curricula need review to specifically provide the right information on malaria sufficient to produce the right knowledge, attitude and practice. Community education programs are also required to directly address the problem in a non-judgmental communicative manner, paying attention to different segments. Intersectoral collaboration (health and education) in this regard would be useful.

ACKNOWLEDGMENT

The authors wish to appreciate Drs. Rose Ukponmwan and Peterson Odiase for their roles in data collection and collation for this study.

REFERENCES

- Abdulraheem, I.S., 2007. Health needs assessment and determinants of health-seeking behaviour among elderly Nigerians: A house-hold survey. *Ann. Afr. Med.*, 6: 58-63.

- Ahorlu, C.K., K.A. Koram, C. Ahorlu, D. Savigny and M.G. Weiss, 2005. Community concepts of malaria-related illness with and without convulsions in southern Ghana. *Malar. J.*, 4: 47.
- Assefa, T., T. Belachew, A. Tegegn and A. Deribew, 2008. Mothers' health care seeking behavior for childhood illnesses in Derra District, Northshoa Zone, Oromia Regional State, Ethiopia. *Ethiop. J. Health Sci.*, 18(3): 87-94.
- de Castro, L.D., P.A. Sy, A.A.A. Alvarez, R.V. Mendez and J.K. Rasco, 2004. Bioethics in the Asia-Pacific Region: Issues and Concerns. In: Bergstrom, P. (Ed.), *Ethics in Asia-Pacific*. Bangkok (Thailand): UNESCO Asia and Pacific Regional Bureau for Education, pp: 7-109.
- Doherty, T. and D. Mabey, 2004. The Spleen. In: Parry E., R. Godfey, D. Maybey and G. Gill (Eds.), *Principles of Medicine in Africa*. 3rd Edn., Cambridge University Press, Cambridge, pp: 1026-1028.
- Fawole, O.I., D.O. Akinboye, C.O. Falade, O.S. Arulogun and J.D. Adeniyi, 2008. Case management of childhood fever by traditional healers in South West Nigeria: Identification of training and collaborative needs. *Int. Q. Commun. Health Educ.*, 28(4): 319-335.
- FMOH and NHREC, 2007. National Code of Health Research Ethics. Federal Ministry of Health and National Health Research Ethics Committee of Nigeria. Abuja, Nigeria.
- Ibadin, O.M., A.N. Ofili, L.U. Airauhi, E.I. Ozolua and A.B. Umoru, 2008. Splenic enlargement and abdominal scarification in childhood malaria. Beliefs, practices and their possible roles in management in Benin City, Nigeria. *Niger. Postgrad. Med. J.*, 15(4): 229-233.
- Jombo, G.T.A., E.M. Mbaawuaga, A.P. Denen, O.O. Alao, E.J. Peters, M.A. Dauda, E.E. Okwori, T.J. Akosu, E.A. Etukumana and J.B. Yaakugh, 2010. Choices of drugs for self-treatment of malaria among adult women in a Nigerian city: Implications for the success of the ongoing 'roll back' malaria programme. *J. Microbiol. Antimicrob.*, 2(6): 57-63.
- NPC [Nigeria] and ICF Macro, 2009. Nigeria Demographic and Health Survey 2008. National Population Commission and ICF Macro. Abuja, Nigeria, pp: 5-16.
- Ndugwa, R.P. and E.M. Zulu, 2008. Child morbidity and care-seeking in Nairobi slum settlements: The role of environmental and socio-economic factors. *J. Child Health Care*, 12: 314-328.
- Ng'ang'a, P.N., Shililu J., G. Jayasinghe, V. Kimani, C. Kabutha, L. Kabuage, E. Kabiru, J. Githure and C. Mutero, 2008. Malaria vector control practices in an irrigated rice agro-ecosystem in central Kenya and implications for malaria control. *Malar J.*, 7: 146.
- NMA, 2006. 5-Year Strategic Plan: 2006–2010. Nigerian Medical Association. Retrieved from: <http://www.nigeriannma.org/strategic.pdf>, (Accessed on: 7th May, 2011).
- Ojikutu, R.K., 2010. Malaria and child survival in Nigeria: Beyond the stethoscope. *Int. J. Acad. Res.*, 2(2): 21-28.
- Oshikoya, K.A., I.O. Senbanjo, O.F. Njokanma and A. Soipe, 2008. Use of complementary and alternative medicines for children with chronic health conditions in Lagos, Nigeria. *BMC Complement. Altern. Med.*, 8: 66.
- Osubor, K.M., A.O. Fatusi and J.C. Chiwuzie, 2006. Maternal health-seeking behavior and associated factors in a rural Nigerian community. *Matern. Child Health J.*, 10(2): 159-169.
- StataCorp, L.P., 2007. Stata/SE 10.0 for Windows. 15-student Edn., Perpetual license: Clement Adebamowo, Serial No.: 81910516846.
- UNESCO, 2005. Towards Knowledge Societies. UNESCO, Paris. Retrieved form: <http://unesdoc.unesco.org/images/0014/001418/141843e.pdf>, (Accessed on: 3rd May, 2011).
- Wagbatsoma, V.A., O. Aimuengheuwa and J. Agabi, 2007. Assessment of abdominal scarification as a treatment for malaria-induced splenomegaly in a rural community: Implications for child health. *RVCH*, 2(2): 106-115.
- WHO and UNICEF, 2000. Management of the Child with a Serious Infection or Severe Malnutrition: Guidelines for Care at the First-Referral Level in Developing Countries. Geneva: World Health Organisation, pp: 24-28.
- WHO, 2002. WHO Traditional Medicine Strategy 2002–2005. Geneva: World Health Organisation. Retrieved from: http://whqlibdoc.who.int/hq/2002/who_edm_trm_2002.1.pdf, (Accessed on: 9th May, 2011).
- WHO, 2003. Social Determinants of Health: The Solid Facts. WHO Regional Office for Europe, 2nd Edn., Copenhagen (Denmark). Retrieved from: www.euro.who.int/_data/assets/pdf_file/0005/98438/e81384.pdf, (Accessed on: 8th May, 2011).
- WHO, 2010. World Malaria Report 2010. Geneva: World Health Organisation. Retrieved from: http://www.who.int/malaria/world_malaria_report_2010/world_malariareport2010.pdf, (Accessed on: 23 April, 2011).
- WMA, 2008. Ethical Principles for Medical Research Involving Human Subjects. Declaration of Helsinki. Tokyo: World Medical Association. Retrieved from: <http://www.wma.net/en/30publications/10policies/b3/17c.pdf>, (Accessed on: 29 August, 2010).