

Short Communication

Comparison of socio-economic and nutritional status between oil producing and non oil producing communities of Delta State

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A survey of socio-economic and nutritional status was carried out in oil producing community and a non-oil producing community in Delta State, Nigeria and results were compared. Well structured closed ended questionnaires were administered to eight hundred subjects (males and females) inclusive of both communities. Blood samples were obtained from 100 subjects (males and females) in each of the communities for Haemoglobin and serum protein analysis. Data was analysed using z-test statistic. Results showed significant reduction ($p < 0.001$) in income, ($p < 0.001$) and in academic level, in oil producing community compared to non-oil producing community. Also there was a significant reduction in haemoglobin and serum proteins in oil producing communities compared to non-oil producing community. Results suggest that crude oil exploration may have a negative impact on the socio-economic and nutritional status of host communities.

Key words: Socio-economic, oil-producing, serum protein.

INTRODUCTION

Nigeria is the largest producer of crude oil in Africa and the 11th largest in the world. It is a major supplier to Europe and 5th largest supplier to USA in 2002 (EIA 2003). The Southern part of the country especially the Niger Delta region provides most of the space for exploration and exploitation of crude oil. This region has so many rivers, streams and creeks through which fresh water empties into the Atlantic Ocean. These rivers provide most of the time the only source of drinking water and marine food for the local communities within the region. During exploration, exploitation and refining of crude oil, accidents in the form of spillages often occur resulting in the contamination of the environment especially these sources of drinking water, exposing the inhabitants of these communities to great danger. Toxic effect of crude oil exposure have been reported by several authors. These include reduction of phytoplankton population (Alexander, 1978) and a near total elimination

transaminase activity in fish (Navia and Rantmaki, 1997) and damage of fish embryo during early embryo-genesis (Jeffery, 2003). Skin loss, dryness, cracking, pigmentation, hypokeratinization, eczematous reactions and dermal neoplasm have been reported. Crude oil exposure caused reduction in Haemoglobin, packed cell volume, and an increase in white cell count (Dede et al., 2002). Diesel exhausts have been reported to affect male reproduction in humans (Seiichi and Ken, 2004). Considering the toxic effect of exposure to crude oil and its product and the present unkempt state of the Niger Delta, it becomes imperative to study and scientifically document the impact that exploration and exploitation of crude oil may have on the socio-economic status and nutritional status of inhabitants of an oil producing community.

METHODOLOGY

Sampling techniques

Cluster sampling and stratified sampling techniques were adopted in choosing communities and individuals respectively.

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Table 1. Shows the difference in income and academic level of both communities.

Community	Oil producing	Non-oil producing	z-value	p-value	Remark
Income	11,100 ± 1510	11,406 ± 1041	3.30	p < 0.001	Significant
Academic level	1.190 ± 0.75	1.647 ± 1.13	7.06	p < 0.001	Significant

Data are presented as Mean ± SD. (n = 400).

Table 2. Shows difference in nutritional assessment, Hb, TSP and SA of both communities.

Community	Non-oil producing	Oil producing	z-value	p-value	Remark
Self feeding assessment	0.741 ± 0.44	0.639 ± 0.41	2.2	p < 0.01	S
Community feeding assessment	0.343 ± 0.48	0.0286 ± 0.028	8.83	p < 0.001	S
Hb (male)	14.87 ± 2.5	13.72 ± 3.0	5.8	p < 0.001	S
Hb (female)	13.72 ± 2.5	13.39 ± 2.3	1.6	p > 0.05	NS
TSP	8.76 ± 1.7	7.87 ± 1.5	3.8	p < 0.001	S
SA	4.1 ± 0.8	3.66 ± 0.76	4.0	p < 0.001	S

Result is presented as Mean ± SD. (n = 400) for nutritional assessment and (n = 100) for TSP, SA and Hb analysis. TSP: Total serum protein, SA: serum albumin. Hb: haemoglobin.

Procedure

Closed ended questionnaires were administered to a total of eight hundred human subjects from two locations: oil producing community and a non-oil producing community both in Delta State which made up of 200 male and female subjects each.

Subjects used for this research must have lived in the locations for at least one year, must not have a chronic ailment-(liver disease, kidney disease etc.) and not obese. Pregnant women were also excluded from this research, as they are known to affect haemoglobin level and serum protein.

Sample collection

Blood samples were collected from a total of two hundred human apparently healthy subjects (subjects without overt symptom of illness, have not been hospitalized in the last one month and are not on any form of medication), from the two locations mentioned above, after their informed consent have been obtained for analysis of haemoglobin and serum proteins. Ethical approval was also obtained from the research ethics committee of the College of Health Sciences Delta State University, Abraka (Project no. CHS/REGC/07/08/001).

Academic levels were coded representing different levels of education thus: 0, 1, 2 and 3 as, No formal education, Primary level, secondary level and Tertiary level of education respectively. Levels 2 and 3 are considered academic achievement.

Biochemical analysis

Haemoglobin concentration was analysed using the Sahli's haemoglobinometer. Total serum protein was determined by Chemical biuret method and serum albumin was determined by bromocresol green dye-binding method (Welchselbaum, 1946).

RESULTS AND DISCUSSION

Results obtained from this research suggests a statistically

significant (p < 0.001) reduction in income and academic levels of people living in the oil producing community under study compared to inhabitants of non-oil producing communities. There were also statistically significant reduction in other parameters such as self assessments in feeding, serum proteins and haemoglobin concentrations; this is in agreement with Dede et al. (2002) who reported a significant reduction in haematological parameters in those communities. Reduction in serum protein levels and haemoglobin suggest poorer nutritional status of oil producing community as other causes were excluded in the research. This may be secondary to the effect of oil pollution on the nutritional level of crops grown in these communities as suggested by Akpofure (2000). The reasons for a reduced income and academic qualification of inhabitant of oil producing community under study is still being studied. As a result, it may be connected to the lack of government presence in term of facilities, education institutions and development. Finally, our observation suggests that crude oil exploration may affect the socio-economic and nutritional status of oil producing rural communities in Nigeria (Tables 1 and 2).

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