



## Community Awareness of Health Problems Associated with Gas Flaring and Programme to Mitigate

Nkemdilim I. Obi<sup>1,2</sup>, Phillip T. Bwititi<sup>1</sup> and Ezekiel U. Nwose<sup>1,3\*</sup>

<sup>1</sup>School of Dentistry & Medical Sciences, Charles Sturt University Australia.

<sup>2</sup>National Oil Spill Detection & Response Agency, Nigeria.

<sup>3</sup>Department of Public & Community Health, Novena University, Nigeria.

### Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

### Article Information

DOI: 10.9734/JOCAMR/2021/v16i230284

#### Editor(s):

(1) Prof. Suma B V, Ramaiah University of Applied Sciences, India.

#### Reviewers:

(1) X S Blessing NimaSajai, University Of Bisha, Saudi Arabia.

(2) Livhuwani Muthelo, University of Limpopo, South Africa.

(3) Fahad K.Y. Al-dulaimi, Northern Technical University, Iraq.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/73004>

Received 27 June 2021

Accepted 07 September 2021

Published 09 September 2021

Short Research Article

### ABSTRACT

**Background:** Gas flaring, which occurs as part oil and gas operations results in release of gaseous toxins into the environment thus has a negative impact on the host communities including fauna, flora and humans. Previous studies focused mainly on the contribution of gas flaring to environmental pollution but not on human health. This article assesses disease prevention and treatment programs for ill-health associated with gas flaring.

**Methodology:** This research followed a mixed method approach of quantitative and qualitative analysis. Qualitative data comprised open-ended questions that sought the thematic views of community on how the companies liaise with either community and/or government, and what they would want the companies to provide to alleviate the health effects of gas flaring. Chi square and correlations were used on quantitative data to determine agreements and statistically significant differences of responses by participants from the questions that were set on Likert scales.

**Outcome:** Chi-square showed statistically significant difference ( $X^2 = z76$ ,  $p < 0.017$ ), when

\*Corresponding author: E-mail: [enwose@csu.edu.au](mailto:enwose@csu.edu.au);

distribution of responses to Question-1 (Benefit of oil company to the community) and Question-4 (Oil companies awareness of potential health problems in the community) were compared. Therefore, the null hypothesis is rejected i.e. there is association between variables and awareness of prevalent ill-health due to gas flaring are responded to with preventive and treatment programs.

**Conclusion:** This notes that there is a relationship between awareness of health problems and intervention and also a lack of capacity among the communities' low-mid social class to appropriately dialogue with the government for change.

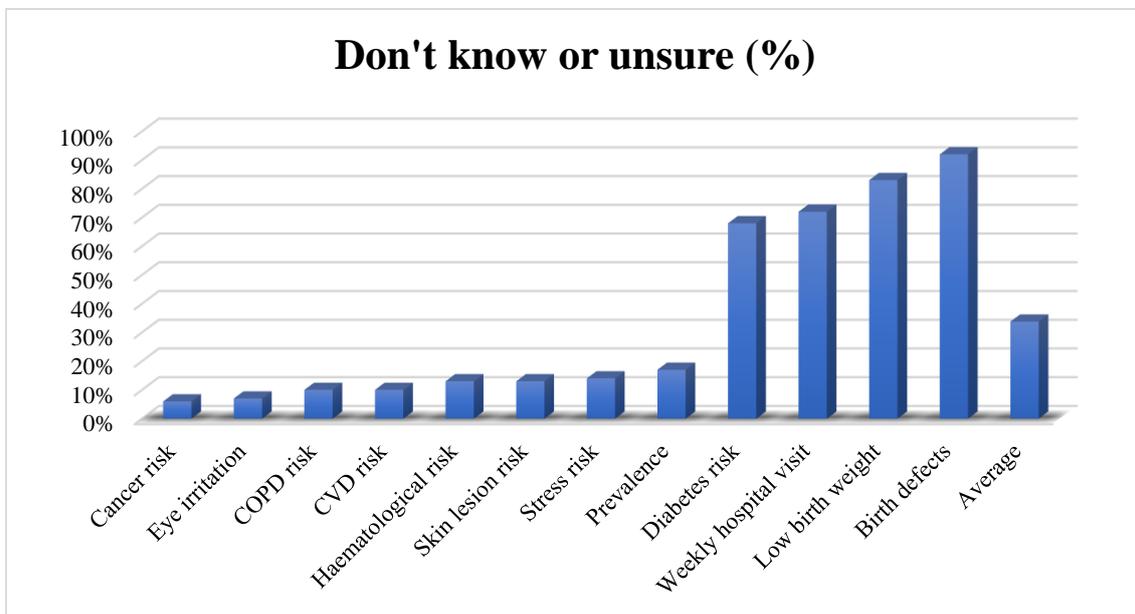
*Keywords: Community awareness; gas flare; human health; negative impact; government; adaptation; mitigation.*

## 1. INTRODUCTION

It appears that literature pays more attention on environmental effects of gas flaring, while there is less research on if/how the associated or prevailing health problems are been managed [1]. Pollution from gas flaring is associated with various health problems, although there is argument around the etiologies of some of the diseases [2] such that causative implications of gas flares remains political. Nevertheless, there is literature that associates gas flares with cancer risk [3], including skin cancer [4]. Concern about birth defects due to the effect of gas flaring is not limited to Nigeria. For instance, a Texas study indicated a 50% likelihood for pregnant women who reside near gas flaring sites to have preterm babies compared to those not exposed to gas flares [5]. Thus, there is a global concern regarding impact of gas flaring. There is also attribution to gas flaring in the prevalence of

metabolic syndrome, although the study was not comparative [6] except perhaps for hypertension [7-9].

Our preliminary study indicates on one hand that only minimal <20% of respondents do not know or are unsure about gas being a risk factor in blood problems, cancer, cardiovascular disease (CVD), chronic obstructive pulmonary disease (COPD), eye and skin irritations. This implies that over 80% of the people perceive gas flare as a health problem. On the contrary, about the high percentage do not know are unsure that gas flare constitutes risk for diabetes or birth defect. Further, 72% respondents do not know or are unsure if these health problems present to their clinic on weekly basis (Fig 1). Therefore, there is indication of need to question if prevention and treatment for diseases attributable to gas flaring are been targeted.



**Fig. 1. Healthcare workers' perspective [10]**

**What is known:** Gas flares has a negative impact on environmental and human health

**What is unknown:** Level of knowledge regarding the health problems associated with gas flaring and programmes of mitigation in the community of is unknown.

**Objective:** Assess disease prevention and treatment programmes for diseases that are associated with gas flaring.

**Hypothesis:** Two hypotheses are

1. H<sub>0</sub>: Perceptions of benefit from oil companies is not associated with (i.e. independent from) awareness of health issues. Alternative (H<sub>1</sub>) being that perceptions of benefit from oil companies is associated with (i.e. not independent from) awareness of health issues.
2. H<sub>0</sub>: Educational information about health impact of gas flaring is not associated (i.e. independent) with programmes to alleviate the health effects. Alternative (H<sub>1</sub>) being that educational information about health impact of gas flaring is associated (i.e. not independent) with programmes to alleviate the health effects.

## 2. METHODS

**Design:** This study followed a mixed method approach of quantitative and qualitative analyses – the latter being to enable open-ended suggestions from respondents. Survey of host community residents including community health workers was done using a validated questionnaire as previously published in the research proposal [11], and further described fully in a separate protocol manuscript (In Press).

**Data:** Survey was carried out on the companies' community relations programs and healthcare

providers experience – re: adaptation and mitigation policies, where adaptation refers to the behavioural change wheel regarding health promotion programs. On a Likert scale of 1-5 representing 'strongly disagree to strongly agree', participants were asked to indicate their degree of agreement or disagreement to 8-questions (listed below).

1. Benefit of oil company
2. Liaison between government & oil company
3. Dedicated equipped health care systems by oil company
4. Awareness of potential health problems
5. Community health promotion policy
6. General educational information with regards to health impact of gas flaring
7. Provide educational information on ways to prevent health impact of gas flaring
8. Programs to alleviate the health effects of gas flaring

## 3. RESULTS

A total of 466 participants responded to the survey. Descriptive statistics 'frequency distribution' of respondents in Table 1a indicate that over 39.9% of the respondents were 36-50 years old, followed by 20-35 years (29.3%). The respondents in the age groups of 51-70 years, greater than 70 years and less than 20 years were 19.6%, 5.5% and 5.7%, respectively. Table 1b shows that 61.1% were males while 38.9% were females. While the descriptive statistics showing the social status of respondents show that the highest proportion of respondents (46.3%) were in the middle class followed by the lower class (38.4%) and the upper class (15.3%). Further frequency distribution of responses is summarized in Table 2. Visual review shows no similarity between the curves of any two, although the nearest 2-pairs are responses to Q2-Q8 as well as Q5-Q6 (Fig 2a-d).

**Table 1a. Descriptive statistics showing the age of respondents (raw SPSS output)**

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	5.6	5.7	5.7
	2	133	28.5	29.3	35.0
	3	181	38.8	39.9	74.9
	4	89	19.1	19.6	94.5
	5	25	5.4	5.5	100.0
	Total	454	97.4	100.0	
Missing	System	12	2.6		
Total		466	100.0		

**Table 1b. Descriptive statistics showing the gender of respondents (raw SPSS output)**

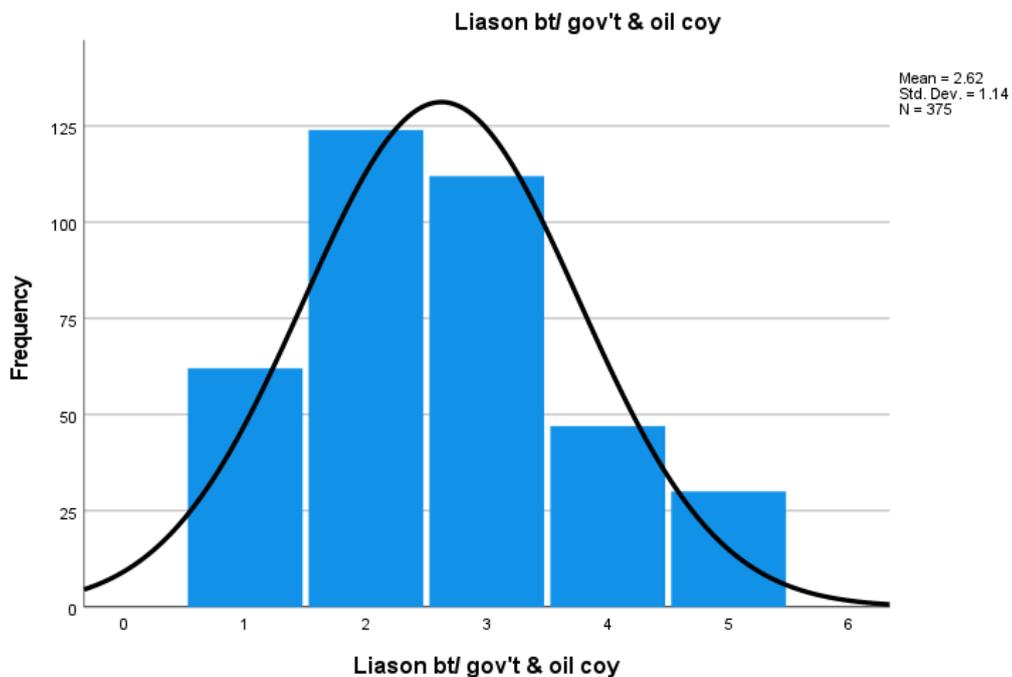
Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	281	60.3	61.1	61.1
	2	179	38.4	38.9	100.0
	Total	460	98.7	100.0	
Missing	System	6	1.3		
Total		466	100.0		

**Table 1c. Descriptive statistics showing the social status of respondents (raw SPSS output)**

Social status		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	171	36.7	38.4	38.4
	2	206	44.2	46.3	84.7
	3	68	14.6	15.3	100.0
	Total	445	95.5	100.0	
Missing	System	21	4.5		
Total		466	100.0		

**Table 2. Valid Percent of responses**

Category	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Strongly disagree	33.9	16.5	16.4	6.0	14.2	19.4	15.8	15.3
Disagree	24.9	33.1	23.1	5.8	27.7	25.6	22.5	22.0
Unsure	13.2	29.9	18.5	7.8	22.8	22.4	23.3	26.3
Agree	14.8	12.5	11.3	46.3	27.1	24.6	30.7	23.5
Strongly agree	13.2	8.0	30.8	34.1	8.2	8.0	7.8	12.9
Sum	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



**Fig. 2a. Distribution of responses on liaison between government and oil company**

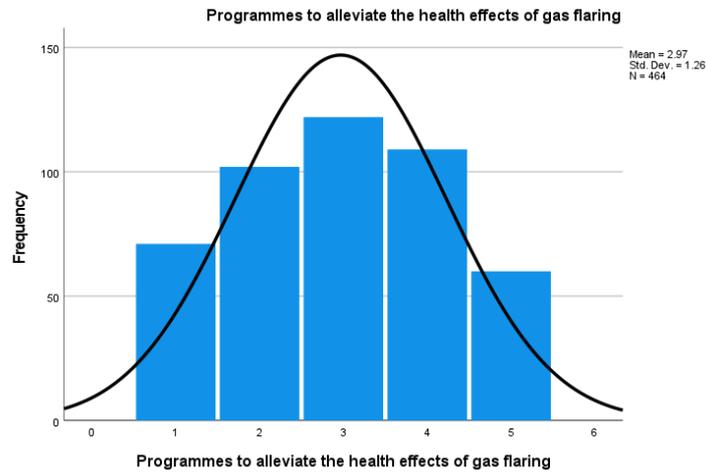


Fig. 2b. Distribution of responses on programmes to alleviate health effects of gas flare

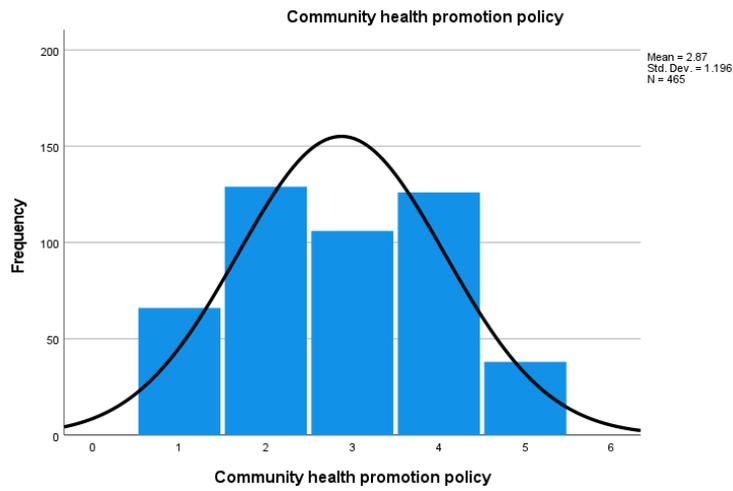


Fig. 2c. Distribution of responses on community health promotion policy

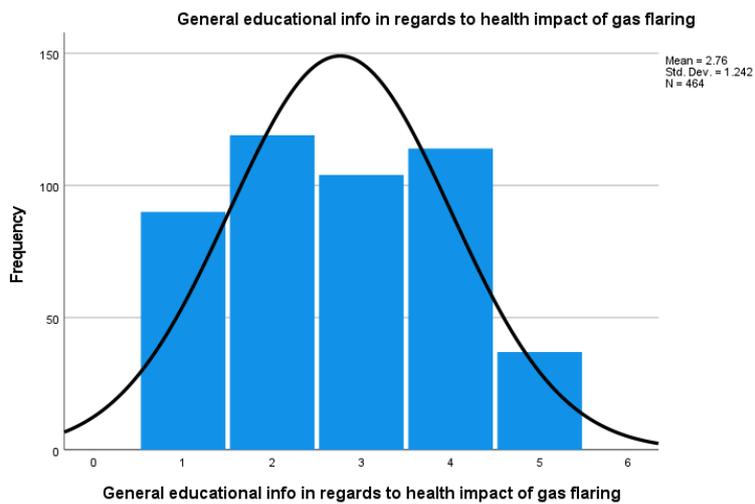


Fig. 2d. Distribution of responses on educational information on health impact of gas flare

Further, another critical review of the frequency of responses to the categorized questions show that about 40% of the participant disagrees while 39% agrees (Fig 3), i.e. that there are disease prevention programs being run by the oil companies in the communities.

significant and linear-by-linear association as well as symmetric measure also significant ( $p < 0.001$ ). On the phenomenon of interest, Q7 vs. Q8 (adaptation vs. mitigation) shows significance ( $X^2 = 582, p < 0.001$ ), including their correlations (Table 3).

Pearson Chi-square comparing distribution of responses to questions 1 and 4 shows statistically significant difference ( $X^2 = 76, p < 0.017$ ), but on linear-by-linear association and symmetric measures ( $p = 0.931$ ). Between both Q2 vs. Q8 ( $X^2 = 76, p < 0.001$ ) and Q5 vs. Q6 ( $X^2 = 500, p < 0.001$ ), Pearson Chi-squares are

MANOVA show statistically significant difference between social classes (Fig 3). However, it is interesting to note similar degree of responses to the question on 'awareness of potential health problems' (i.e. no difference – Table 4) among the social classes.

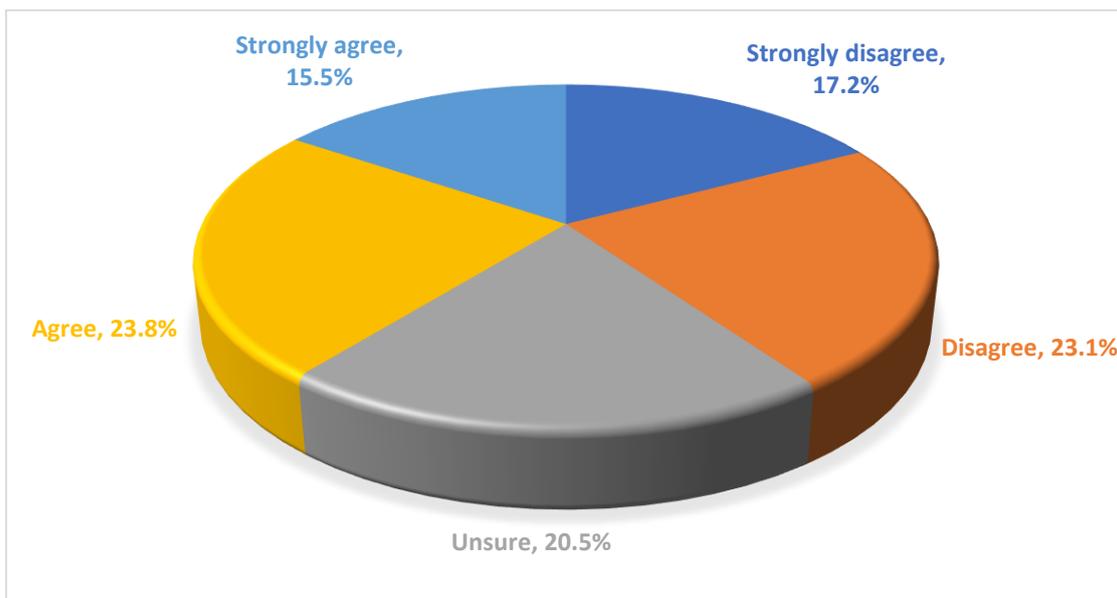


Fig. 3. Averaged degree of agreement or disagreement on evaluation of health programs

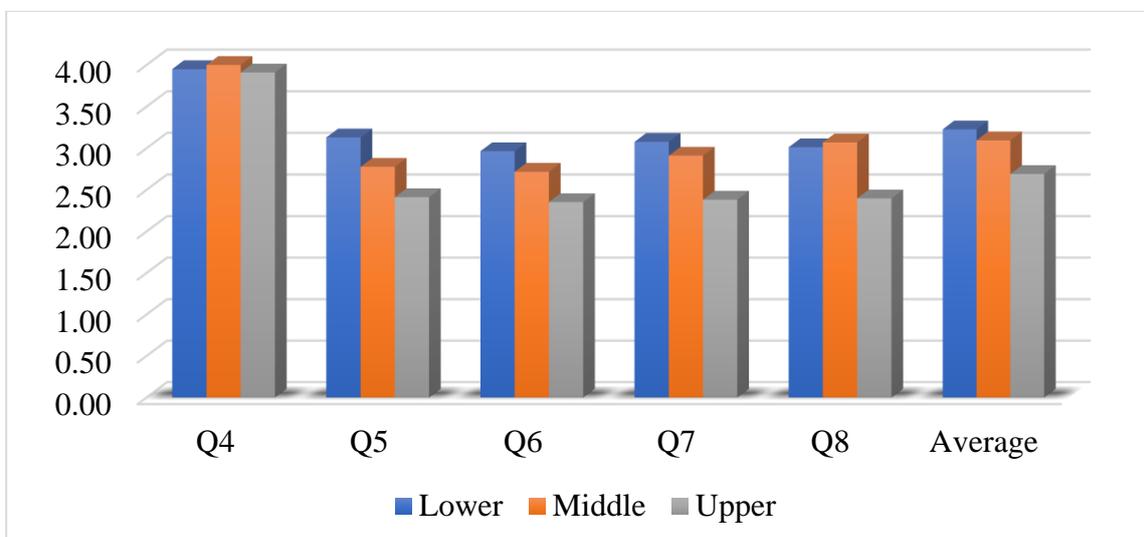


Fig. 4. Comparison of responses by social class

**Table 3. Adaptation and mitigation correlation – SPSS analysis output**

<b>Symmetric Measures</b>		<b>Value</b>	<b>Asymptotic Standard Error<sup>a</sup></b>	<b>Approximate T<sup>b</sup></b>	<b>Approximate Significance</b>
Interval by Interval	Pearson's R	.804	.019	29.009	.000 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	.807	.020	29.333	.000 <sup>c</sup>
N of Valid Cases		462			

a. Not assuming the null hypothesis.  
b. Using the asymptotic standard error assuming the null hypothesis.  
c. Based on normal approximation.

**Table 4. MANOVA output showing significant differences except on awareness question**

<b>Multiple Comparisons</b>							
<b>LSD</b>							
<b>Dependent Variable</b>	<b>(I) Social status</b>	<b>(J) Social status</b>	<b>Mean Difference (I-J)</b>	<b>Std. Error</b>	<b>Sig.</b>	<b>95% Confidence Interval</b>	
						<b>Lower Bound</b>	<b>Upper Bound</b>
Community health promotion policy	1	2	.35*	.122	.004	.11	.59
		3	.72*	.169	.000	.39	1.05
	2	1	-.35*	.122	.004	-.59	-.11
		3	.37*	.165	.027	.04	.69
	3	1	-.72*	.169	.000	-1.05	-.39
		2	-.37*	.165	.027	-.69	-.04
General educational info on health impact of gas flaring	1	2	.25	.128	.054	.00	.50
		3	.61*	.176	.001	.27	.96
	2	1	-.25	.128	.054	-.50	.00
		3	.36*	.171	.034	.03	.70
	3	1	-.61*	.176	.001	-.96	-.27
		2	-.36*	.171	.034	-.70	-.03
Provide educational info regarding ways to prevent health impact of gas flaring	1	2	.17	.125	.183	-.08	.41
		3	.69*	.172	.000	.36	1.03
	2	1	-.17	.125	.183	-.41	.08
		3	.53*	.168	.002	.20	.86
	3	1	-.69*	.172	.000	-1.03	-.36
		2	-.53*	.168	.002	-.86	-.20
Programmes to alleviate the health effects of gas flaring	1	2	-.06	.129	.656	-.31	.20
		3	.61*	.177	.001	.27	.96
	2	1	.06	.129	.656	-.20	.31
		3	.67*	.173	.000	.33	1.01
	3	1	-.61*	.177	.001	-.96	-.27
		2	-.67*	.173	.000	-1.01	-.33
Awareness of potential health problems	1	2	-.04	.115	.712	-.27	.18
		3	.04	.158	.796	-.27	.35
	2	1	.04	.115	.712	-.18	.27
		3	.08	.155	.590	-.22	.39
	3	1	-.04	.158	.796	-.35	.27
		2	-.08	.155	.590	-.39	.22

### 3.1 Qualitative Analysis – (N = 279)

Three thematic views are summarized from the Q9a

1. Meetings: 235 respondents including 55%, 47% and 65% of the lower-, middle- and upper-class groups respectively.
2. Don't know/unsure: 21 respondents not including anyone from the upper social status
3. Other comments: 23 respondents including only 2/68 (3%) of the upper-class group

Further details of results are intended to come along with other qualitative analysis in subsequent paper i.e. 6<sup>th</sup> article in this series.

## 4. DISCUSSION

The objective of this study was to assess disease prevention and treatment programs for diseases that are associated with of gas flaring. Nigerian economy depends largely on petroleum resources and petroleum exploration in Nigeria has been associated wastage of the gas components by flaring and this has caused extensive negative public health impacts including lives [12]. Further, Nigerian government has legislations and regulatory mechanisms to regulate the gas flaring – such as the Nigerian National Petroleum Corporation (NNPC) and National Environmental Standards and Regulations Enforcement Agency (NESREA). However, a comparative evaluation of the regulatory program showed “...ineffective, inefficient, and non-transparent gas flaring laws and policies ... conflict of interest on the part of the government, regulatory officials and the oil and gas companies...” [13].

The ‘conflict of interest’ by the government came to limelight back in 1999 on the execution of community protest leaders [14] and it was reported that the basis of this conflict of interest is lack of autonomous enforcement agency, because government is both the owner and the regulator [13, 15, 16]. Therefore, besides Chi-square analysis to compare distribution of responses, a second quantitative analysis is between social class groups i.e. to delineate government and oil company affiliates from the lower socioeconomic members of the community. This second analysis still constitutes major phenomenal comparison of interest.

First, descriptive ‘frequency distribution’ statistics show only 39% of the respondents agrees that

there are disease prevention programs run by the oil companies in the communities (Table 2 & Fig 3). Therefore, the majority (61%) either disagrees, don't know, or are unsure. It is expected that there would be agreement to availability of prevention programs but the high percentage of disagreement implies the proportion of the community is dissatisfied. Thus, to some extent, this observation supports a report of high level of distress in the communities experiencing gas flaring [17]. Hence this report contributes empirical data, albeit from another subpopulation, to further corroborate what is already known.

Secondly, Chi-square showed statistically significant difference ( $X^2 = 76$ ,  $p < 0.017$ ), when distribution of responses to Question-1 (Benefit of oil company) and Question-4 (Awareness of potential health problems) were compared. Therefore, first null hypothesis is rejected i.e. there is association between variables and ‘awareness of prevalent diseases or health issues as a result of gas flaring are responded to with preventive and treatment program’. The analysis between both Q2 vs. Q8 and Q5 vs. Q6 were also significant ( $p < 0.001$ ), Pearson Chi-squares are significant and linear-by-linear association as well as symmetric measure also significant ( $p < 0.001$ ). These observations also imply a relationship between awareness of health problem and intervention.

**Correlations between adaptation and mitigation:** The Q7-Q8 were evaluated the correlation of adaptation and mitigation policies. In this study, question on provision of educational information assessed adaptation program (Q7), while health ‘treatment’ programs to alleviate represented mitigation (Q8). Chi-square shows significance ( $X^2 = 582$ ,  $p < 0.001$ ), including their correlations (Table 3). Therefore, the second null hypothesis is also rejected. That is, the alternate hypothesis is accepted that educational information about health impact of gas flaring is associated i.e. not independent of programs to alleviate the health effects.

These observations from Chi-square analysis support the view of 39% respondents who agreed on availability of health programs being provided. With regards to the recent report that calls on the oil companies to support efforts towards combatting the public health issues linked with their operations, especially to placate the restiveness in host communities [18], this report suggests increased awareness of programs among the community.

**Behavioural change wheel:** Thirdly, MANOVA show statistically significant differences between social classes (Fig 3). There is no differences in level of agreement on 'awareness of potential health problems' among the social classes and no statistical differences between the lower and middle social groups on 'Provide educational info regarding ways to prevent health impact of gas flaring' or Programmes to alleviate the health effects of gas flaring' (Table 4). Therefore, the predominant differences are in the responses between the upper social group versus others can be interpreted from a variety of perspectives.

From the cynical perspective, it may be partly bias by those in the upper social class who are representatives of community chiefs, oil companies, or government. This view corroborates with opinions about government's conflict of interest [13,15,16] and repressive nature on matters regarding oil exploration and the communities' restiveness [14,18]. In terms of BCW, this connotes unwillingness to change buoyed by lack of motivation i.e. due to conflict of interest. This therefore supports the speculation that authorities lack commitment or political will to address the oil communities' concerns [19].

On a logical perspective, it may be that those in the upper social class are more aware, compared to lower or middle class. For instance, the Nigerian government have the power to enforce laws on gas flaring, and the 'legislations are not aimed at the conservation of the natural resources and prevention of waste' [13], but these facts may be unknown to the low-middle class community. In the context of BCW and based on *knowledge is power* concept, this implies lack of capacity among the communities' low-mid social class to appropriately dialogue with the government for change. This adds empirical data to supports a statement from a recent report of a review that there is "lack of grassroots orientation to the negotiation and implementation of" corporate social responsibility programs [20].

Lastly, the qualitative data does support the third quantitative analysis observations. The majority of the upper social class indicate that the oil companies have meetings with community leaders and government. However, most (2/23 ~ 87%) of the dissenters are from the low-mid social class groups. Further, 100% of the respondents who indicated that they either don't know or are unsure are from the low-mid social class groups. This observation resonates with

the notion that community members still worry about the impact of oil exploration with associated gas flaring on their lives [17,18], and that government as well as companies may be indisposed to the wellbeing of the people [12]. What this report highlight is delineation of social classes of the people within the community for a more correct survey of perspectives i.e. besides the hypothesis tested.

This piece of study has been scoped to be limited to one of five specific objectives. This is discretionary and other four objectives of the research work shall be reported as part of this series. Further limitations are elaborated in the protocol paper (in Press).

## 5. CONCLUSION

The aim of this study was to assess prevention and treatment program for diseases associated with gas flaring. A significant finding from this study is that there is an association between awareness of health problem and intervention from oil companies and government. In the context of the BCW, the results suggest a lack of capacity among the communities' low-mid social class to appropriately dialogue with the government for change. It is therefore imperative to further study to validate these claims.

## CONSENT

Consent was implied by respondents returning their completed questionnaire

## ETHICAL APPROVAL

This study is part of a doctoral thesis at Charles Sturt University, Australia; with Ethics approval (protocol number H20004).

## DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal academic efforts of the authors.

## ACKNOWLEDGEMENT

Professor Adjene from Novena University has supported this work during data collection and is hereby appreciated. My employer (NOSDRA) and management are also appreciated for giving NIO time to do this PhD work.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Obi N, Akuirene A, Bwititi P, Adjene J, Nwose E. Community health perspective of gas flaring on communities in Delta region of Nigeria: narrative review. *Int J Sci Rep.* 2021;7(3):180-185.
2. Ana G. Air Pollution in the Niger Delta Area: Scope, Challenges and Remedies. *The Impact of Air Pollution on Health, Economy, Environment and Agricultural Sources.* 2011;181.
3. Ana G, Sridhar M, Bamgboye E. Environmental risk factors and health outcomes in selected communities of the Niger delta area, Nigeria. *Perspectives in Public Health.* 2009;129(4):183-191.
4. Ana G, Sridhar M, Asuzu M. Environmental risk factors and hospital-based cancers in two Nigerian cities. *Journal of Public Health and Epidemiology* 2010;2(8):216-223.
5. University of South California. Study of natural gas flaring finds high risks to babies: Researchers found exposure was associated with 50% higher odds of preterm birth compared with no exposure; 2020.
6. Nwafor A, Mmom F, Obia O, Obiandu C, Hart V, Chinko B. Relationship between blood pressure, blood glucose and body mass index and coexisting prehypertension and prediabetes among rural adults in Niger Delta Region, Nigeria. *Journal of Advances in Medicine and Medical Research.* 2015;1-12.
7. Maduka O, Tobin-West C. Is living in a gas-flaring host community associated with being hypertensive? Evidence from the Niger Delta region of Nigeria. *BMJ Global Health.* 2017; 2(4):e000413.
8. Ezejimofor M, Uthman O, Maduka O, Ezeabasili A, Onwuchekwa A, Ezejimofor B, Asuquo E, Chen Y, Stranges S, Kandala N. The burden of hypertension in an oil-and gas-polluted environment: a comparative cross-sectional study. *American journal of hypertension.* 2016;29(8):925-933.
9. Egwurugwu J, Nwafor A. Prolonged exposure to oil and gas flares ups the risks for hypertension. *American Journal of Health Research.* 2013;1(3):65-72.
10. Akuirene OA, Adjene JO, Obi NI, Nwose EU. Impact of gas flaring in Ubeji metropolis of Delta State Nigeria: a comparative survey of environment health effects. *Int J Sci Rep.* 2019;5(10):283-290.
11. Obi NI, Bwititi PT, Nwose EU. Study proposal of the impact of gas flaring on health of communities in Delta state Nigeria. *Int J Sci Rep.* 2021;7(9):468 - 472.
12. Elum ZA, Mopipi K, Henri-Ukoha A. Oil exploitation and its socioeconomic effects on the Niger Delta region of Nigeria. *Environmental science and pollution research international.* 2016;23(13):12880-12889.
13. Otiotio D. Gas flaring regulations in the oil and gas industry: A comparative analysis of Nigeria and Texas regulations; 2013. Available:[https://www.academia.edu/3615407/gas\\_flaring\\_regulation\\_in\\_the\\_oil\\_and\\_gas\\_industry\\_a\\_Comparative\\_Analysis\\_of\\_Nigeria\\_and\\_Texas\\_Regulations?email\\_work\\_card=reading-history](https://www.academia.edu/3615407/gas_flaring_regulation_in_the_oil_and_gas_industry_a_Comparative_Analysis_of_Nigeria_and_Texas_Regulations?email_work_card=reading-history)
14. Manby B. The role and responsibility of oil multinationals in Nigeria. *Journal of International Affairs.* 1999;53(1):281-301.
15. Ogbuigwe A. Refining in Nigeria: history, challenges and prospects. *Applied Petrochemical Research.* 2018;8(4):181-192.
16. Francis NN, Pegg S. Socially distanced school-based nutrition program under COVID 19 in the rural Niger Delta. *Extr Ind Soc.* 2020;7(2):576-579.
17. Nriagu J, Udofia EA, Ekong I, Ebuk G. Health risks associated with oil pollution in the Niger Delta, Nigeria. *International Journal of Environmental Research and Public Health.* 2016;13(3):pii: E346.
18. Orisakwe OE. Crude oil and public health issues in Niger Delta, Nigeria: Much ado about the inevitable. *Environmental research.* 2021;194:110725.
19. Chijioke BO, Ebong IB, Ufomba H. The impact of oil exploration and environmental degradation in the Niger Delta Region of Nigeria: A study of oil producing

- communities in Akwa Ibom State. Global journal of Human Social Science. 2018;18(3):54-70.
20. Andrews N, Bennett NJ, Le Billon P, Green SJ, Cisneros-Montemayor AM, Amongin S, Gray NJ, Sumaila UR. Oil, fisheries and coastal communities: A review of impacts on the environment, livelihoods, space and governance. Energy Research & Social Science. 2021;75:102009.

---

© 2021 Obi et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*

*The peer review history for this paper can be accessed here:*  
<https://www.sdiarticle4.com/review-history/73004>