

Petroleum Distillates Use In Folk Medicine In South Eastern Nigeria

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Abstract

A survey of 592 individuals, in four local government areas in the South East of Nigeria was carried out to determine the use of petroleum distillate products in treating common ailments. It was found that there was a high number of respondents (69%) using one or more of these toxic products in treating common ailments. Products commonly used topically and ingested include brake fluid (hydraulic fluid), kerosene, petrol, crude oil and engine oil. It is believed that the lack of affordable healthcare coupled with high illiteracy encourages the use of these products. It is suggested that the relevant Government agencies such as the Ministry of Health and the National Agency for Food and Drug Administration and Control (NAFDAC) be made aware of these findings in order to educate the populace on the dangers of these products.

INTRODUCTION

This study examined the use of petroleum distillate products in medication by people in Cross River and Akwa Ibom States in South Eastern Nigeria.

Folk remedies refer to herbs, roots, over the counter medication, foods and other commonly used household items. Use of folk remedies is universal occurring in many cultures. Folk remedies are common and relied on amongst the black community universally and have been documented in many cultures (Johnston, 1977; Snow, 1983; Risser and Mazur, 1995; Smitherman et al., 2005). Lack of accessible and affordable health care, poverty and mistrust in the health care system has historically been associated with folk remedies (Patcher et al., 1998; Plotkin and Post, 1999).

In the area of study, the health service, as is true of most of Nigeria, consists of an uneven distribution and inadequate number of health facilities especially in primary health care (CR-SEEDS, 2005). Many of the health institutions lack adequate personnel and facilities to provide quality care for the public. Most facilities lack basic provisions such as ambulances, utility vehicles, water, electricity, drugs and equipment. There is a high level of disease burden due to preventable causes, rising prevalence of noncommunicable diseases (NCD's) with insufficient resource allocation to the health sector. This lack of an adequate and affordable healthcare system lends itself to the reliance on folk based medicine and superstition.

Petroleum products are highly complex chemical mixtures consisting predominantly of hydrocarbons. Petroleum distillates are toxic and have been described as similar to kerosene which can cause impaired brain function, tremor, irritation to the skin and eyes and respiratory tract, and can be absorbed into the body through the skin (Gosselin, 1984); and similar to gasoline (petrol) which can damage lungs, peripheral neuropathy, fatty liver, and cause changes in the kidney, spleen and bone marrow (Gosselin, 1984). Impaired coordination and convulsions can occur with overexposure (O'Donoghue, 1985). Tests on patients after chronic exposure to petroleum distillates have been shown to result in reduced blood flow to the brain, vestibular disturbance which can impair balance and coordination, abnormal electrocardiograph (ECG), impaired neurocognitive testing in many studies with some cases developing dementia, impotence, palpitations and sleep disturbance including sleep apnea (Arlien-Soborg, 1992). Kerosene poisoning among users has been described by other researchers. Kerosene is a central nervous system depressant in high doses and a gastrointestinal and respiratory tract irritant (Ellis et al, 1994; Nagi and Abdulallah, 1995; Reed and Conradie, 1997,). Aspiration of kerosene -contaminated vomitus is a secondary source of pulmonary exposure that may lead to chemical (lipoidal) pneumonitis (Eade et al, 1974), a delayed onset and potentially fatal lung disorder characterised by cyanosis, dyspnoea and chest x-ray opacities (Mabie and Wunderink, 2003). A rare complication of kerosene

intoxication may be cardiac arrhythmia and ventricular fibrillation, attributed to increased myocardial sensitivity to endogenous catecholamines (Bebarta and DeWitt, 2004). Kerosene has also been described as a mild, transient ocular irritant that may produce conjunctivitis, hyperaemia and lacrimation (Koschier, 1999). Death following oral exposure to kerosene is normally associated with aspiration of vomit rather than systemic toxicity per se; vomiting occurs in approximately one third to one half of patients (Litovitz and Greene, 1988).

Use of petroleum distillates as medication is not common but some cases are documented. A study (Crowder, 2001) showed kerosene sugar and candy ingested for colds, kerosene application for toothache and kerosene vinegar and pepper for rheumatism. Inhalation as a consequence of an unusual use of kerosene as folk medicine for upper respiratory tract infection was shown to result in pneumonia combined with contact dermatitis (Nussinovitch et al, 1992).

This study examined the use of petroleum distillate products in medication by people in Cross River and Akwa Ibom States in South Eastern Nigeria with a view to recommending a safeguard against the dangers of using petroleum distillates products for medication.

METHODS

This study was carried out using a structured questionnaire. The questionnaire was structured so that the respondent remained anonymous and the investigators were unable to link any returned questionnaire to any particular individual. Prior to a questionnaire being given to any individual, cooperation was sought by the field worker issuing a letter from the University explaining the nature of the study being carried out. In cases where a respondent was illiterate and unable to fill in the questionnaire, assistance was given by the field worker or a friend of the respondent.

Frequency analysis was carried out using SPSS (Statistical package for social scientists) 12.0.1 for Windows

Area of study

The four communities studied can be described as semi-urban. They are all local government headquarters. They are similar, in that they are the seat of Local Government and the population consists of a cross mix of the whole local government indigenes with a few non indigenes who also work and trade in the community.

Akamkpa local government area has a population of

170,284; Biase 145,345; Odukpani 175,860 and Ibeno 42,249 (CR-Seeds, 2005 and AK-Seeds, 2005). In Akamkpa 272 individuals were interviewed, 125 in Biase, 52 in Odukpani and 143 in Ibeno making a total of 592.

RESULTS

Use of petroleum distillates showed that 69% of those surveyed used one or more petroleum distillate products in self medication as shown in Table 1.

Figure 1

Table 1: Number of individuals using petroleum distillate products for medication, by Local Government Area

Local Government Area	Use of one or more petroleum distillates products (%)	Brake fluid (%)	Kerosene (%)	Petrol (%)	Crude (%)	Engine oil (%)
Akamkpa	234(86)	103(38)	156(57)	90(33)	64(23)	35(13)
Ibeno	73(51)	53(37)	36(25)	1(0.7)	0(0)	1(0.7)
Biase	72(58)	39(31)	38(30)	18(14)	14(11.2)	9(7)
Odukpani	31(60)	22(42)	14(27)	0(0)	0(0)	0(0)
Total	410(69)	217(37)	244(41)	109 (18)	78(13)	45 (8)

In one local government area (Akamkpa) use was as high as 86%.

Table 2 shows the relationship between genders in the use of petroleum distillate products as medicine. There was little difference in the use of petroleum distillate use by gender.

Figure 2

Table 2: Number of individuals using petroleum distillate products for medication, by gender

Sex	Number interviewed	Use of one or more petroleum products (%)	Brake fluid (%)	Kerosene (%)	Petrol (%)	Crude (%)	Engine oil (%)
Male	316	211(67)	115(36)	120(38)	61(19)	41(13)	23(7)
Female	276	199(72)	102(37)	124(45)	48(18)	37(14)	22(8)
Total	592	410(69)	217(37)	244(41)	109(18)	78(13)	45(8)

Use by females was slightly higher than males by 5%. Also there was very little difference among respondents who used petroleum distillate products for medication, with respect to age as shown in Table 3.

Figure 3

Table 3: Number of individuals using petroleum distillate products for medication, by age

Age	Number interviewed	Use of one or more petroleum distillates (%)	Brake fluid (%)	Kerosene (%)	Petrol (%)	Crude (%)	Engine oil (%)
18-30	330	217(66)	122(37)	111(34)	57(17)	40(12)	14(4)
31-49	228	166(72)	82(36)	120(53)	47(21)	33(14)	25(11)
50+	34	27(79)	13(38)	13(38)	5(15)	5(15)	6(18)
TOTAL	592	410(69)	217(37)	244(41)	109(18)	78(13)	45(8)

Petroleum distillates use in medication is found to be less among government employees, with those in the health sector showing the lowest use (43%), followed by nonhealth sector workers (65%) [See Table 4].

Figure 4

Table 4: Petroleum distillate use in medication, by occupation

(%)Occupation	Number Interviewed	Number using One or more petroleum distillates	Percentage %
Government worker (Non health sector)	207	134	65
Government worker (health sector)	82	35	43
Self employed	21	18	86
Farmer	22	18	82
Trader	29	26	90
Transport worker	27	24	89
Mechanic	17	14	82
Building worker	14	12	86
Housewife	61	49	80
Student	41	29	71
Unemployed	39	33	85
Other	32	18	56
Total	592	410	69

All other sectors showed use of over 80%, except students who were slightly lower (71%).

Table 5 shows the total number of persons using various petroleum distillates for self medication.

The use of kerosene by respondents as medication for various disease conditions is significant. The main use of kerosene by respondents was as a cure for sore throats (35%) and this was by ingestion. It was also applied to fresh wounds as was brake fluid. Kerosene was ingested to treat diarrhea and poison, applied to teeth in the case of toothache and dropped into the eye for conjunctivitis.

Petrol was mainly used as a cure for whitlows (16%) and for toothache 2% as shown in Table 5.

Crude oil or crude petroleum is the product before distillation into other products. This is used to treat a wide variety of ailments, it is thought to have magical properties hence its use in convulsions, epilepsy and poisoning cases. However it is also used for various skin conditions and for cough and stomach ache. The use of crude oil as a palliative measure for convulsion is highest

(3.5%) and lowest as a remedy for helminthes infections (0.2%).

Figure 5

Table 5: Ailments treated using petroleum distillate products

CONDITION TREATED	BRAKE FLUID	KEROSENE	PETROL	CRUDE OIL	ENGINE OIL	NO. OF INDIVIDUALS	% OF TOTAL	METHOD OF USE
Sore throat		208	1			209	35.3%	A cube of sugar is placed in a tea spoon of substance and sucked
Eczema	147			2		149	25.1%	Applied to infected area
Whitlow		3	89	3		95	16.0%	Applied to surface of whitlow
Fresh wounds	40	18	4	5	1	68	11.5%	Applied directly to wound
Burns	2			7	24	33	5.6%	Rubbed onto burn surface
Convulsion				21	1	22	3.7%	Rubbed over the body
Circumcision				2	16	18	3.0%	Applied to circumcision wound
Tooth ache		1	14			15	2.5%	Applied directly to affected tooth
Poison		1		12		13	2.2%	A teaspoon full is ingested
Ringworm	8			2		10	1.7%	Area of ringworm scrubbed before application
Spots	8					8	1.4%	Rubbed into area of spots
Sore	3	1		2	2	8	1.4%	Applied directly to sore
Conjunctivitis	2	4				6	1.0%	Dropped into eye
Stomach ache		1		5		6	1.0%	A teaspoon full is ingested
Bells		4		1		5	0.8%	Applied on surface of bell
Epilepsy				5		5	0.8%	A teaspoon full is ingested
Dandruff	3			1	1	5	0.8%	Rubbed into scalp
Dislocations/ sprains/ Pains				4		4	0.7%	Rubbed on affected area
Cough				3		3	0.5%	A teaspoon full is ingested
Pimples	3					3	0.5%	Rubbed into area of pimples
Swollen lymph node	1	2				3	0.5%	Applied to area of swelling
Ear ache				2		2	0.3%	Dropped into ear
Diarrhoea		1				1	0.2%	A teaspoon full is ingested
Rashes			1			1	0.2%	Applied on rash

DISCUSSION

This study examined the use of petroleum distillates as folklore medication amongst people in the South East of Nigeria. The area consists of mainly rural villages, with the Local Government head quarters consisting of semi urban towns. The people's occupation consists of subsistence farming, petty trading, cottage industry and the civil service. The government is the largest employer of labour.

Due to poverty, many people cannot afford the conventional health care services which consist of a few ill-equipped government health centers and some private clinics. Consequently only in cases of serious medical conditions is any attempt made to use conventional health care services. For common ailments and conditions there is a dependency on native doctors, herbalists, chemists and pharmacies manned by locally unqualified personnel and folk medicine. There is a lot of dependency on seeking advice from friends, relatives and the local drug stores at the onset of a medical condition.

The use of petroleum distillates is widespread as can be seen in Table 1, where it was found that amongst those surveyed, 69% of people used one or more petroleum distillate

products for one ailment or other. This ranged from 51% use in Ibeno, to 86% use in Akamkpa.

Gender did not seem to play a major role in the use of petroleum distillate products, with females only slightly higher (72%) than males (67%). Age did not seem to have any effect on who used petroleum products as medication.

An individual's occupation appears to play a role in the use of petroleum distillate products. Even though the percentage use is still unacceptably high there are some clear differences in petroleum products use based on employment. The lowest use of the products occurs amongst health workers (43%) and non-health sector government workers (65%). It would be expected that health workers would be more aware of health issues and both health workers and other government workers would be expected to be more literate. Other occupations showed use of petroleum distillate products at between 80% and 90%, except in the case of students which was 71%. In this area of the world, mechanics, traders, farmers, etc., are more likely to have just a basic education, and as these are not normally the professions of choice for educated individuals, it therefore seems that the use of petroleum distillates as a medication is linked to literacy and education.

Petroleum distillates are skin irritants (Gosselin, 1964) yet it is found that, brake fluid, kerosene, petrol, crude oil and engine oil are applied directly to the skin surface to treat a number of ailments (Tables 5). It was observed that crude oil and engine oil are used on young babies and children to treat convulsions and circumcision wounds. This is likely to stem from the fact that the normal native treatment for these conditions is palm kernel oil, thus, crude oil that is thought to have magical properties is a substitute.

Brake fluid (hydraulic fluid) and kerosene (Table 5) are used by dropping them directly into the eye to treat conjunctivitis, yet it is documented that these products may produce conjunctivitis and lacrimation (Koschier, 1999).

Kerosene, petrol and crude oil are all ingested for the treatment of one ailment or the other (Tables 5), yet it is well documented that these substances are toxic and can lead to a variety of serious conditions (Gosselin, 1984; O'Donoghue, 1985; Alien-Soborg, 1992; Reed-Conradie, 1997 and Koschier, 1999) and even lead to death (Litovitz and Greene, 1988; Mabie and Wunderink, 2003).

Obviously the individuals who use these products to treat various ailments must find them useful at the time, but they

are unlikely to be aware of the dangers involved and the long term consequences of their use. It is imperative that government agencies such as the Ministry of Health and the National Agency for Food and Drug Administration and Control (NAFDAC) are made aware of these findings and implement policies to reduce petroleum distillate products use as a medication. It will also be desirable for much research to be carried out, to have an idea on how widespread petroleum distillate use in medication is in Nigeria as a whole.

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