

Family self-medication for children in an urban area of Nigeria

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Aims: The role of family self-medication has not been evaluated in the previous drug utilisation studies in Nigerian children. This study aimed at determining the prevalence in Nigeria of parental self-medication to their children and to identify the drugs involved.

Methods: 1500 pupils were randomly selected from 20 public and private schools. The pupils were given a simple structured questionnaire to give to their mothers. 1121 questionnaires were filled and returned, of which 1110 were fully completed and these represent the absolute number of households involved in the study.

Results: 604 children suffered an illness in the month before the study.

Hospital care was sought by 363 (60%) mothers and self-medications were administered by 263 (43%) mothers. Cough mixture, ascorbic acid and cotrimoxazole were the most frequently administered self-medications by parents. Ascorbic acid, iron, cough mixture and paracetamol were the most common drugs kept at home by the mothers.

Conclusion: Self-medication among urban children in Nigeria is common. The existing laws regarding the use and sale of over the counter drugs, prescribed and non-prescribed drugs should be strengthened to ensure rational use of medicines.

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Introduction

Drug utilisation in children is of great concern globally and has received a lot of attention. Many studies have been conducted in this area, both in the developed and developing countries, and have all shown various problems ranging from misuse and abuse of prescribed drugs, and errors of medications¹⁻⁶. Children constitute a larger percentage of the population in developing

countries and are prone to many illnesses as a result of poverty⁷. Most drugs in children are used outside of hospitals, both as prescribed and non-prescribed drugs⁸. The first response by most families to many illnesses in their children has been found to be use of non-prescribed drugs⁹. The most frequently used drugs are traditional/herbal drugs, antibiotics, antispasmodic agents, anti-malarials and antipyretics^{2,6,9-11}. The conditions for which the drugs were used include fever,

diarrhoea, vomiting, cough and upper respiratory tract infection^{9,10,12}.

Self-medication is defined as the act of obtaining and consuming drugs without the advice of a doctor either for diagnosis, prescription or surveillance of treatment¹³. The nature and extent of self-medication varies in different cultural contexts^{11,14-16} and social and educational influences may be greater than the influence of medical practice¹⁷. In Nigeria, it is possible to buy prescribed and non-prescribed drugs with or without prescriptions from a wide variety of sources¹⁸. These drugs, if not fully used, may be kept for future use by the parents.

Previous drug utilisation studies in Nigerian children have focused mainly on the rational use of prescribed drugs based on WHO prescribing indicators^{3,4,6} but only few have evaluated the role of family self-medication in drug utilisation in children¹⁹⁻²¹. The aim of this study was to determine the prevalence in Nigeria of parental self-medication to their children and to identify the drugs involved.

Methods

Ten public schools and 10 private schools were selected in Lagos state by selecting two schools each from five urban local government areas from an approved list obtained from the Lagos State Ministry of Education using a table of random numbers. Only pupils from primary 1 to 5 were used for the study. From each school, 75 pupils were selected using a systematic sampling method from the school register (15 pupils from each class). In schools where the required number could not be obtained, a higher number was picked from another school with more pupils to make up the required number.

A total of 1500 pupils were thus obtained for inclusion in the study. Permission for the survey was obtained from the Lagos State Ministry of Education and the proprietors of the private schools. A simple questionnaire was designed for the mothers of the pupils. Attached to the questionnaire was a declaration form signed by the researchers, which assured the participants the confidentiality of all the information to be provided. The questionnaire asked about the socio-demography of the mothers; family history and practice of self-medication by the family; commonly used drugs as self-medication; attitudes toward use of herbal medicines and specific details regarding symptoms and use of medicines in the preceding month. The questionnaire was distributed to the pupils to give to their parents to fill and return to their class teachers.

Self-medication, in the context of this study, refers to the use of previously prescribed drugs, over the counter drugs (OTCs), left-overs of previously used/prescribed drugs, non-prescribed drugs for a particular ailment or re-filling prescribed drugs with an old prescription without consulting with a doctor.

Data collected were analysed using SPSS version 13 software.

Results

Out of the 1500 questionnaires distributed, 1121 (74%) were filled and returned. Only 1110 questionnaires were fully completed and these represent the absolute number of households involved in the study. These questionnaires were the only ones analysed.

Demography of the mothers and their children

The majority (97%) of the mothers were educated up to secondary school level and above. Their ages ranged from 21 to 53 years. Most of them (88%) were between 31 and 45 years. Seven hundred and sixteen mothers (64%) were professionals and their professions ranged from teaching to public and civil service. Only a small minority of mothers were not in paid employment (2%). Most of the mothers had three (33%) and four children (31%). These children were aged 5 to 11 years (mean age 8.2 years). The majority of the children (56%) were girls.

Chronic diseases

Sixty children (5.4%) had a chronic illness for which they were using regular medications. Table 1 shows the list of medications taken by the children with different chronic health conditions. Asthma (24 cases) and sickle cell disease (12 cases) were the most common chronic diseases.

Recent illnesses in the last month

Six hundred and four children in 604 different households suffered an illness in the month before the study that necessitated intervention. Table 2 shows the list of symptoms of the children and the parental interventions. Three hundred and sixtythree mothers (60%) sought hospital based medical care, some of whom initially took to self-medication before seeking hospital care. Self-medication was practiced by 263 (44%) mothers. Cough 219 (36%), catarrh 183 (30%), fever 144 (24%) and skin rash/infection 114 (19%) were the commonest symptoms in the preceding month.

Table 1 List of drugs used by mothers to treat their children's chronic illness

| Health conditions (number of children) | Drugs used | Prescribed number* | Non-prescribed number** | Total number of drugs |
|---|----------------------|-----------------------|----------------------------|--------------------------|
| Sickle cell disease (12) | Pyrimethamine | 10 | – | 62 |
| | Ascorbic acid | 8 | 2 | |
| | Folic acid | 12 | – | |
| | Vitamin B complex | 12 | – | |
| | Aloe vera | 2 | 4 | |
| | Herbal soap | – | 2 | |
| | Paracetamol | 3 | 7 | |
| | Aspirin | 1 | 1 | |
| Total | | 46 | 16 | |
| Asthma (24) | Salbutamol | 12 | 2 | 28 |
| | Aminophylline | 4 | 2 | |
| | Franol® | – | 4 | |
| | Aloe vera | 2 | 2 | |
| Total | | 18 | 10 | |
| Chronic cough (6) | Cough syrup | 1 | 5 | 19 |
| | Honey | – | 3 | |
| | Cotrimoxazole | 1 | 4 | |
| | Salbutamol | 1 | 2 | |
| | Procold® | – | 2 | |
| | | 3 | 16 | |
| Recurrent diarrhoea (6) | Cotrimoxazole | 1 | 3 | 15 |
| | Diastop® | 1 | 4 | |
| | Metronidazole | 2 | 4 | |
| Total | | 4 | 11 | |
| Eye problem (6) | Steroid eye drops | 2 | 1 | 10 |
| | Chloramphenicol | 2 | 3 | |
| | Eye drops | – | – | |
| | Gentamicin eye drops | 1 | – | |
| | Yeast | 1 | 1 | |
| Total | | 6 | 4 | |
| Cardiac problem (6) | Aspirin | 4 | – | 6 |
| | Aloe vera | – | 2 | |
| Total | | 4 | 2 | |
| Grand total (60) | | 81 | 59 | 140 |

*Drugs prescribed by doctors each time the patient attends a follow up clinic

**OTC, left over drugs, drugs prescribed by non medically qualified health professionals (nurses, pharmacists, chemists) or friends and relations or drugs refilled with old prescriptions

Franol contains theophylline and ephedrine; Diastop contains kaolin; Procold contains paracetamol, pseudoephedrine HCl, chlorpheniramine maleate.

Herbal medicines

Three hundred and seventy eight of the 1110 (34%) mothers had used herbal medicines for their children. Sixty three (17%) used 72 herbal medicines for their children in the last month (Table 2).

Self-medications in the last month

Self-medicated drugs (non-prescribed drugs) utilised in the last month by the children according to their symptoms is summarised in Table 3. A total of 1648 drugs were used by the 604 children, giving a mean drug use of 2.7 drugs per patient.

Table 2 Symptoms suffered by children in the last month and parental interventions

| Symptoms* | Number of cases (n = 604) | Medical care | Self medication | Herbal medicine | Intervention Chemist/ pharmacist | Nurse's care | Use of remnant of drugs at home |
|-----------------------|------------------------------|-----------------|--------------------|--------------------|--|-----------------|--|
| Cough | 219 | 107 | 65 | 15 | 11 | 12 | 9 |
| Catarrh | 183 | 87 | 66 | 3 | 8 | 13 | 6 |
| Fever | 144 | 64 | 45 | 11 | 10 | 7 | 7 |
| Skin infection/rashes | 114 | 28 | 48 | 18 | 6 | 6 | 8 |
| Abdominal pain | 60 | 18 | 12 | 20 | 6 | 2 | 2 |
| Eye discharge | 30 | 20 | 4 | – | 6 | – | – |
| Vomiting | 24 | 13 | 6 | – | 1 | 2 | 1 |
| Constipation | 24 | 8 | 8 | 2 | 3 | 2 | 1 |
| Diarrhoea | 18 | 6 | 4 | 2 | 2 | 3 | 1 |
| Irritability | 12 | 2 | 4 | 1 | 2 | – | 3 |
| Ear discharge | 12 | 3 | 3 | – | 5 | 1 | – |
| Tooth decay | 6 | 4 | – | – | 1 | 1 | – |
| Furunculosis | 6 | 3 | 2 | – | 1 | – | – |
| Total | | 363 | 263 | 72 | 62 | 49 | 38 |

* Some children suffered more than one ailment thus multiple responses are obtained here

Table 3 Parental medication for 604 children with an illness in the last month

| Drug | Number of children receiving drug in the last month | Reasons for administering the drug |
|-------------------------------|---|---|
| Cough mixture | 321 | Cough (314), fever (4), abdominal pain (3) |
| Ascorbic acid | 231 | Catarrh (186), skin rash/infection (24), fever (20) irritability (1) |
| Cotrimoxazole | 143 | Cough (56), catarrh (48), skin infection/rash (18), fever (10), diarrhoea (9), irritability (2) |
| Chloroquine | 90 | Fever (90) |
| Paracetamol | 84 | Fever (58), catarrh (12), constipation (8), abdominal pain (6) |
| Pro-cold® | 72 | Catarrh (72) |
| Antiseptic powder | 64 | Skin infection/rash (64) |
| Herbal medicine | 63 | Abdominal pain (20)*, skin rash/infection (18)*, cough (15)*, fever (11)*, catarrh (3), constipation (2), diarrhoea (2), irritability (1) |
| Metronidazole | 59 | Abdominal pain (45), diarrhoea (14) |
| Ampicillin/cloxacillin | 57 | Cough (36), skin rash/infection (21) |
| Iron blood tonic | 43 | Fever (28), skin rash/infection (19), cough (6) |
| Milk of magnesium trisilicate | 37 | Abdominal pain (31), constipation (6) |
| Promethazine | 32 | Vomiting (32) |
| Vitamin B complex | 29 | Fever (8), constipation (8), catarrh (6), abdominal pain (6) |
| Artesunate | 29 | Fever (29) |
| Amoxicillin | 26 | Cough (8), abdominal pain (6), catarrh (6), constipation (6) |
| Multivitamins | 25 | Skin rash/infection (18), irritability (7) |
| Chlorpheniramine | 23 | Irritability (9), fever (8), catarrh (6) |
| Gentamicin cream | 23 | Skin rash/infection (23) |
| Bactobran® cream | 18 | Skin rash/infection (18) |
| Chloramphenicol eye drop | 17 | Eye discharge (17) |
| Ketoconazole cream | 16 | Skin rash/infection (16) |
| Steroid cream | 15 | Skin rash/infection (15) |
| Yeast | 15 | Eye problem (15) |
| Sulphadoxine/pyrimethamine | 15 | Fever (15) |
| Sodium bicarbonate | 14 | Constipation (14) |
| Hyosine hydrochloride | 13 | Abdominal pain (13) |
| Steroid eye drop | 12 | Eye itching (12) |
| Diastop® | 11 | Diarrhoea (11) |
| Chloramphenicol eardrop | 11 | Ear discharge (11) |
| Roxithromycin | 10 | Ear discharge (10) |
| Ibuprofen | 9 | Fever (8), irritability (1) |
| Gentamicin eyedrop | 8 | Eye discharge (8) |
| Kidcare® | 8 | Fever (8) |
| Chloamphenicol eye ointment | 8 | Eye discharge (8) |
| Actifed® | 6 | Catarrh (6) |
| Aloe vera | 6 | Catarrh (6) |
| Salicylate balm | 4 | Cough (4) |
| Honey with lime | 4 | Cough (4) |
| Mist Kaolin | 3 | Abdominal pain (3) |
| Erythromycin | 3 | Ear discharge (3) |
| Griseofulvin | 2 | Skin rash/infection (3) |
| Tetracycline | 2 | Abdominal pain (2) |
| Gripe water® | 2 | Constipation (2) |
| Ampicillin | 2 | Irritability (2) |

*More than one herbal medicines were used

Kid care contains chloroquine; Diastop contains kaolin; Gripe water contains *Terpeness dill* seed oil, sodium bicarbonate, ginger tincture and alcohol 0.221 ml; Actifed contains triprolidine and pseudoephedrine; Bactobran contains mupirocin calcium in a cream

Cough mixture and ascorbic acid were the most frequently used drugs. Cotrimoxazole was the third most frequently used drug for a wide variety of symptoms.

Prescribed drugs in the last month

Among the mothers who sought medical intervention for their children, 106 children were prescribed 446 drugs, mean drug use of 4.2 drugs per patient (Table 4). Paracetamol 72 (68%) and artesunate 66 (62%) were the most frequently prescribed drugs.

Drugs kept at home

All the parents kept some medicines at home (Table 5). Ascorbic acid 852 (77%), iron 660 (60%), cough mixture 606 (55%), paracetamol

570 (51%), and vitamin B complex 468 (42%) were the most commonly kept drugs at home. The mean total number of drugs kept at home per patient was 4.5.

Discussion

Self-medication was seen in children with chronic health conditions (Table 1) and those with minor symptoms (Table 3). Similar findings have been reported in both adults and children in India¹¹. The 44% prevalence rate of self-medication observed in this study is similar to the 37% reported in an urban population in India²². Others have reported rates between 13% and 95% in other developing countries²³⁻²⁶. The mean total number of self-medicated drugs per patient was 2.7, which is identical to an earlier report from Nigeria²².

Table 4 Drugs prescribed by doctors to 106 children with an illness in the last month

| Drugs | Total number of prescriptions |
|-------------------------------|-------------------------------|
| Paracetamol | 72 |
| Artesunate | 66 |
| Cough mixture | 54 |
| Chloroquine | 42 |
| Ascorbic acid | 36 |
| Iron blood tonic | 30 |
| Cotrimoxazole | 30 |
| Ampicillin/cloxacillin | 18 |
| Vitamin B complex | 15 |
| Erythromycin | 13 |
| Milk of magnesia | 12 |
| Chlorpheniramine | 11 |
| Amoxicillin/clavulanic acid | 6 |
| Amoxicillin | 6 |
| Folic acid | 6 |
| Anthelmintics | 6 |
| Metronidazole | 5 |
| Ibuprofen | 5 |
| Penicillin ointment | 5 |
| Bactroban cream® | 5 |
| Gentamicin cream | 3 |
| Total drugs prescribed | 446 |

Prescription of herbal supplements and sporadic use of herbal medications by children with chronic health conditions, especially in asthmatics and sickle cell anaemic children is not surprising because of the reported global trends of use of alternative and complementary medicines in children with asthma²⁷⁻²⁹ and sickle cell disease³⁰. Use of herbal medicine, as observed in this study, is not peculiar only to children with chronic health conditions.

The most common symptoms reported in this study that were treated by parental self-medication were malaria and upper respiratory tract infection.

Table 5 Medicines kept at home by mothers

| Drug | Number of mothers keeping the drug at home (n = 1110) |
|---|---|
| Ascorbic acid | 852 |
| Iron | 660 |
| Cough mixture | 606 |
| Paracetamol | 570 |
| Vitamin B complex | 468 |
| Chloroquine | 312 |
| Chlorpheniramine | 252 |
| Antibiotics | 210 |
| Herbal medicines | 192 |
| Artesunate | 138 |
| Mist kaolin | 132 |
| Sulphadoxine/Pyrimethamine | 126 |
| Cod liver oil® | 96 |
| Ibuprofen | 96 |
| ORS | 84 |
| Kid care® | 66 |
| Aspirin | 73 |
| Promethazine | 42 |
| Gripe water® | 30 |
| Nospamin® | 12 |
| Metronidazole | 12 |
| Salbutamol | 6 |
| Antacids | 6 |
| Piccan® | 6 |
| Total number of drugs kept at home | 5047 |

ORS: Oral Rehydration Solution; Nospamin contains homatropine methylbromide (an anticholinergic); Piccan contains paracetamol and diphenhydramine

Home management of these health conditions by mothers, before reporting to hospitals, has been reported in Nigeria^{12,19-21,31}. The presumptive diagnosis of the doctors who attended to the sick children with fever might have accounted for the prescription of paracetamol and artesunate. The implication of this is not only the positive influence it has on the mothers to keep paracetamol and artesunate at home and further promote self-medication, but could also promote early emergence of resistant malaria to the novel antimalarial drug from using monotherapy rather than combined artemisinin recommended by the World Health Organization³² and the national guideline for malaria treatment in Nigeria³³. A high resistance to chloroquine and sulphadoxine with pyrimethamine has been reported in all parts of Nigeria³³. Therefore they are not recommended in the national guidelines as first line drugs for malaria treatment. The extensive use of both chloroquine and sulphadoxine with pyrimethamine by mothers is of concern as they are likely to be ineffective and not diminish the malaria burden in Nigeria.

The use of cotrimoxazole was common, probably because the drug is one of the very cheap antibiotics in the market. Both cotrimoxazole and sulphadoxine with pyrimethamine have been reported as a major cause of erythema multiforme in Nigerian children³⁴, therefore inappropriate use of these drugs may put the children at risk of an adverse drug reaction.

The use of vitamin B complex as self-medication or prescribed by doctors (Tables 3, 4, 5) is not surprising. We have previously reported the extensive use of this drug in children in Nigeria⁶. The use may be attributed to the wrongful belief of most Nigerian mothers and doctors that the drug stimulates appetite during illness⁶.

The shelf life and stability of medicines kept at home, especially on a warm climate, are known to decrease over time³⁵, thereby increasing treatment failure from loss of potency and possible toxicity.

The four medicines that were most frequently kept in the parent's home in our study were ascorbic acid, iron, cough mixture and paracetamol. In contrast, studies in Tanzania have reported analgesics and antibiotics³⁶ or antimalarials³⁷ as the medicines most likely to be kept in the home by parents.

This study has presented self-medication in the setting of an urban population, but the situation may be different in rural or remote areas of Nigeria, where the people are deprived socially, economically and educationally with scarce health facilities. Further studies in the future to compare

self-medication in rural and urban settings in Nigeria are therefore suggested.

Conclusion

Self-medication is widespread in urban children in Nigeria. Consequences of this include the risk of antimicrobial and antimalarial resistance, treatment failure and drug toxicity. The need for promoting the appropriate use of drugs in the Nigerian health care system is important. There is need for authorities to be proactive regarding over the counter, prescribed and non-prescribed drugs so as to ensure rational sale and use by parents. Periodic studies on the knowledge, attitude and practice of self-medication may give an insight into the changing pattern of drug use in the Nigerian societies.

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