PATTERN OF SELF-MEDICATION FOR ACUTE FEBRILE ILLNESS IN THE OUTPATIENT CLINIC OF AN URBAN TERTIARY HOSPITAL IN JOS.

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ABSTRACT

Background: Fever is a symptom of many diseases irrespective of age, sex, etc. Self medication for acute febrile illness is increasing in scope and content globally, often with severe consequences. Knowledge of the pattern of self medication for acute febrile illness can help to streamline and profer solutions to irresponsible and dangerous practices. The study set out to determine the forms and factors affecting self medication for acute febrile illness at the General Out-Patient Department (GOPD) of Bingham University Teaching Hospital (BHUTH), Jos.
Methods: It was a cross-sectional study at the GOPD of BHUTH, Jos from October 2012 to February 2013. The participants were drawn from all patients with fever or history of fever of not more than two weeks duration at presentation. Data was collected with interviewer-administered structured questionaire and analysed with the Statistical Programme for Social Science (SPSS), version 21.

INTRODUCTION

Self-care, including self-medication has been a feature of healthcare for decades.[1] This is due to the fact that people have better access to information, are better involved in health care and are more ready to accept personal responsibility for their health. Governments, health insurers and international organisations are also increasingly encouraging appropriate self-care. First, it is a means of limiting the rate of increase of third party funding of health care, and secondly it can promote early and judicious response to diseases.[1,2]

Self-medication usually involves over the counter medications (OTC), but in parts of Nigeria including Jos, where there is poor control of drug production and distribution, people can buy many classified medications from numerous outlets.[3]

Fever is a common manifestation of many diseases especially malaria, one of the most important parasitic disease in the tropics.[4] Various other causes of acute febrile illness result from bacterial, viral and parasitic infections. Fever and cough have been known to stimulate the use of medications prior to clinic visit.[5]

A better understanding of health-seeking behaviour of people especially when suffering from acute fever, a common symptom in the tropics, is important for effective management and control of malaria.[6] It is documented that self-treatment at home is the major action taken to manage malaria, a common cause of acute febrile illness.[7]

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 treatment.[3] Self-medication involves the use of previously prescribed drugs, over the counter drugs (OTC), left over of previously used/prescribed drugs, non-prescribed drugs for a particular ailment or refilling prescribed drugs with an old prescription without consulting a doctor. It includes home treatment, self-treatment, folk treatment, drug sharing, treatment in school, office etc. without a physician's diagnosis, prescription and supervision.

Acute febrile illness implies an illness with a history of fever not more than two weeks or a recorded axillary temperature of $\geqslant 37.5\,^{\circ}C$ on presentation.[8]

The main disadvantage of self-medication in acute febrile illness is the lack of clinical evaluation of the patients by trained health professionals which could result in missed alternate diagnoses and delay in appropriate treatment.[6]
This study aimed to determine the level, pattern and determinants of self-medication for acute febrile illness among outpatients presenting in the study population.

SUBJECTS, MATERIALS AND METHODS

STUDY DESIGN

This is a cross sectional study of all patients presenting with fever or history of fever at the out-patient department of Bingham University Teaching

Hospital (BHUTH) Jos. Approval to conduct the study was obtained from the Health Research Ethics Committee of Bingham University Teaching Hospital, Jos, and written consent was obtained from all participants.

We included consenting patients presenting with a temperature of 37.5^{0}C or more, or those who had a history of fever not more than two weeks' duration. Patients needing immediate surgical intervention or had no reliable informant were excluded. A reliable informant was an adult, regular care giver who understood the English language or any of the other eight languages for which there were interpreters.

SAMPLE SIZE ESTIMATION

The sampling frame was estimated to be 1300 from an unpublished study on the turn-out of febrile patients at the GOPD of BHUTH. With a 95% confidence level which corresponds to a value of 1.96, the sample size was calculated to be 308, using the formula:

$$n = \frac{z^2pq}{d^2}$$

Non-response rate was set at 5%. The sampling ratio was 1:4. The sample was taken from all eligible patients who presented during the study period. For patients who were less than 18 years of age, their care givers constituted the respondents. Data collection was done using a structured, interviewer-administered questionnaire. Data was collected into a prepared data sheet and analysed with SPSS version 21.

RESULTS.

Out of 3620 patients who presented at the GOPD and A&E, 1506 (41.6%) had fever for less than two weeks. Of these, 1420 (94.3%) met the inclusion criteria and were given the opening statement. A total of 1232 (86.8%) gave consent for the study, and from this group, a sample of 308 was recruited for the study.

The respondents were split almost midway between patients and care givers. Almost 60% of the respondents were between ages 21-40 years. They were mostly female (53.2%), had tertiary education (50%), Christians (88.6%), married (79.2%), and the single commonest ethnic group was Igbo (21.4%). The occupational groups with the highest numbers were civil servants (39.0%) and traders (31.2%). Almost 80% of the families of the respondents were in the two lowest income groups earning less than ₦50,000 a month. Other details are in Table 1.

Table 1: Demographic characteristics of respondents

Demographic characteristics		Frequency (N = 308)	Percentage (%)
Status of respondent	Patient	159	51.6
	Care giver	149	48.4
Age group	≤ 20	38	12.3
	21-30	90	29.2
	31-40	88	28.6
	41-50	51	16.6
	>50	41	13.3
Gender	Male	144	46.8
	Female	164	53.2
Education	None	25	8.1
	Primary	38	12.3
	Secondary	96	31.2
	Tertiary	149	48.4
Religion	Christianity	273	88.6
	Islam	35	11.4
Marital status	Single	64	20.8
	Married	244	79.2
Ethnic group	Igbo	66	21.4
	Berom	32	10.4
	Hausa/Fulani	20	6.5
	Yoruba	19	6.2
	Other Plateau indigene	57	18.5
	Others	114	37.0
Occupation	Civil servant	90	39.0
	Trader	72	31.2
	House wife	44	19.0
	Unemployed	16	6.9
	Professional	9	3.9
Income per Month (₦)	⩽25,000	116	37.7
	25,001-50,000	122	39.6
	50,001-75,000	29	9.6
	75,001-100,000	18	5.8
	>100,000	23	7.5

The prevalence of self-medication was 85%. (Figure 1)

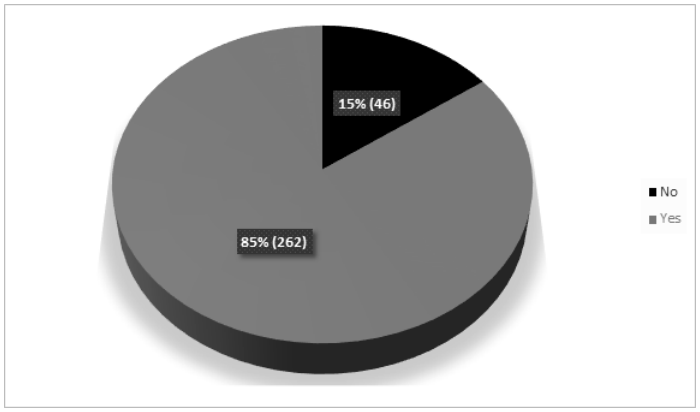


Figure 1. Level of self-medication among respondents.

The majority of respondents (90.6%) identified mosquito bite as a cause of their fever. (Table 2)

Table 2. Perception of causes of febrile illness.

Cause of febrile illness	Frequency (N)	Percentage (%)
Mosquito bite	279	90.6
Contaminated food	40	12.9
Dirty water	39	12.7
Dirty environment	25	8.1
Stress	11	3.6
Change in weather	11	3.6
Cold	10	3.2
Eating too much cooking oil	4	1.3
*Others	4	1.3
Don't know	1	0.3

Note: Total > 100% because multiple options were selected by some respondents.
***Others**: Lack of medical care, Exposure to sun, Teething problem and Sepsis

The commonest medications self-administered were analgesics (78.2%), anti-pyretics (78.2%) and anti-malarials (54.9%). About 13.6% did not use any medication. (Table 3)

Table 3. Types of medication(s) used before presentation in the hospital.

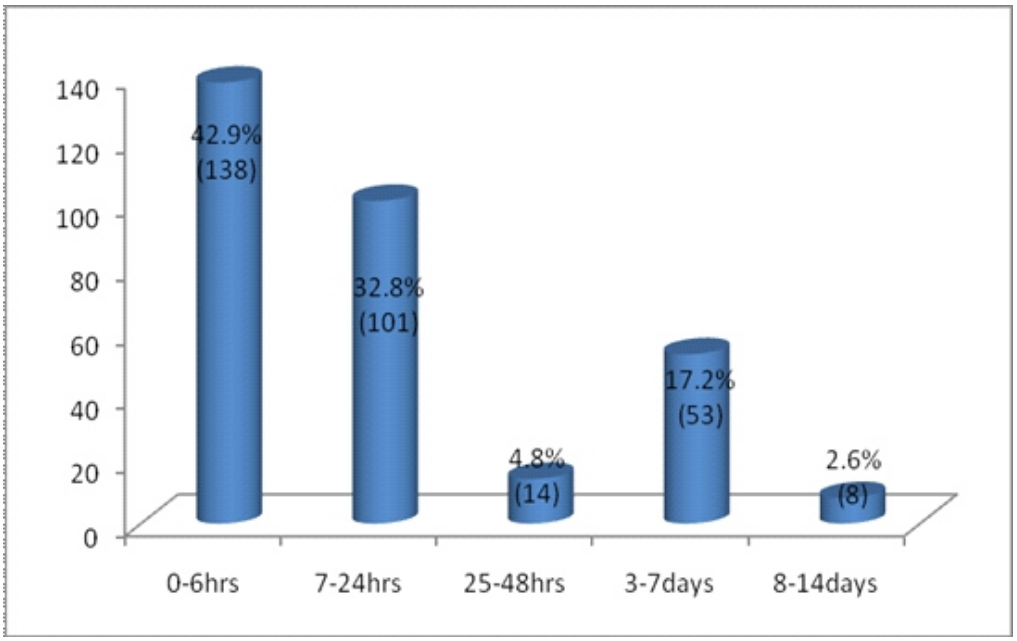
Type of medication(s)	Frequency (N)	Percentage (%)
Analgesic	241	78.2
Anti-pyretic	241	78.2
Anti-malaria	169	54.9
Antibiotic	83	26.9
Herbal drugs	5	1.6
*Other alternative practices	9	2.9
No medication	42	13.6

Note: Total > 100% because some respondents used more than one type of medication.
*Other alternative practices include prayer, body massage.

Majority of them (67.2%) accessed these treatments from Patent Medicine Stores and pharmacies before presentation in the study centre. Some (14.9%) did not have any treatment before presentation. (Table 4)

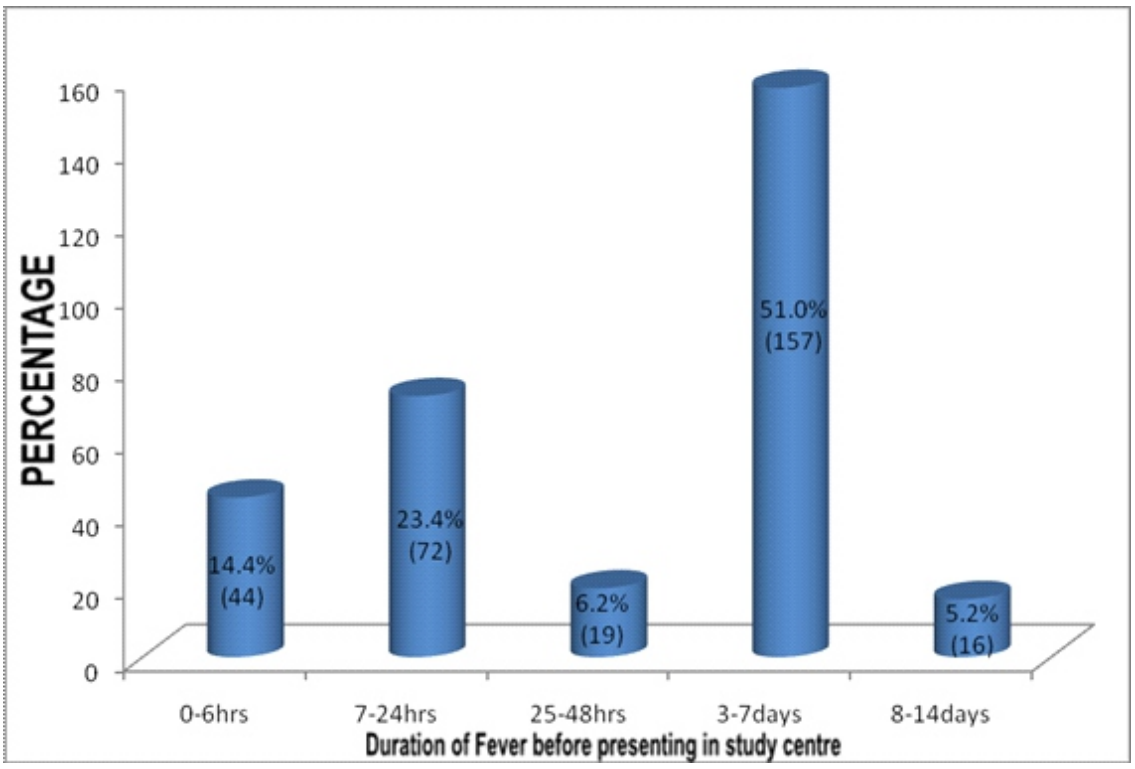
Table 4. Place of treatment.

Place of treatment	Frequency (N)	Percentage (%)
Patent Medicine Store	207	67.2
Hospital	41	13.3
Home	30	9.7
Traditional medicine practitioner	4	1.3
No treatment	46	14.9



In contrast, a minority (38%) presented to hospital within 24 hours, while 51% presented between 3 and 7 days. (Figure 3)

Figure 3. Bar chart showing duration of fever before presentation in the hospital



Respondents were almost equally likely to use one (23.4%), two (25.6%) or three (23.1%) self - treatment modalities before presentation. (Table 5)

Table 5. Treatment modalities undergone before presentation in the hospital.

Number of treatment	Frequency (N)	Percentage (%)
1	72	23.4
2	79	25.6
3	71	23.1
4	26	8.4
≥5	11	3.6
No treatment	49	15.9
Total	308	100%

Multiple logistic regression showed that respondents earning <₦9,600/month were nine times more likely to self-medicate compared to those earning higher: (P=0.03, OR 9.21 95%CI 1.20-70.61). Similarly, patients were twice more likely than caregivers to report self-medication (P=0.03, OR 2.25 95% CI 1.09-4.65). Other sociodemographic variables were not significant predictors of self-medication. Other details are in Table 6.

Table 6. Multiple logistic regression of factors related to self-medication.

Variables	P	OR (95% CI)
Sex (Male)	0.55	1.23 (0.62-2.43)
Age (<40years)	0.94	0.97 (0.47-2.02)
Occupation (Student/Unemployed)	0.73	1.17 (0.48-2.82)
Income (<₦9,600/month)	**0.03**	**9.21 (1.20-70.61)**
Education (tertiary)	0.13	0.58 (0.29-1.17)
Status (Patient)	**0.03**	**2.25 (1.09-4.65)**
Religion (Christianity)	0.99	1.0 (0.31-3.27)
Marital status (Single)	0.62	1.29 (0.47-3.54)

DISCUSSION

This was a cross sectional study of the pattern of self-medication for acute febrile illness at the outpatient department of BHUTH, Jos. Data was collected and analysed for all 308 recruited participants.

Patients constituted 51.6% of respondents while other care givers were 48.4%. The care givers responded on behalf of patients who were less than 18 years of age. These care givers were mostly older family members. This is expected because the family has a major influence on decisions about the health of an individual.[9,10,11] In a similar study reported from India, Paine et al found 73.6% patient respondents and 26.4% caregivers.[12] These care givers were also called messengers in their setting because they ran the errand to procure the drugs for self-medication. The high proportion of patient respondents in the Indian study may have to do with the method of recruitment. There was no age barrier and respondents were recruited in the community pharmacies where they accessed self-medication. Young patients were not likely to send older messengers to purchase drugs but instead would go get the drugs themselves unlike our study where caregivers responded on behalf of participants less than 18 years of age.

Almost 60% of the respondents were between 20 and 40 years. Similar findings were reported by Afolabi in his study of the pattern of self-medication in an urban adult population in Owo, south western Nigeria,[13] and by Okeke et al in south eastern Nigeria.[4] This age group represents the most active group in any society. Being the most active and productive segment of the community, this age group is exposed to psychological and physical stress. Physical stress may include weather, environment and work. They are also less likely to pay adequate attention to disease prevention strategies. These may explain why this age group is more likely to present with fever in the hospital. A heavy disease burden in this age group can adversely affect the community.

Females (53.2%) were more than the males (46.8%). One study from India found that there was no gender bias in the choice of seeking treatment.[14] However, other studies indicate higher female utilization of health facilities. Omalase et al found 59.5% female in a study of self-medication amongst general out-patients in a Nigerian community.[15] Okeke found over 95% female respondents in South Eastern Nigeria while Auta found 44.7% female among pharmacy students in Jos.[4,16] Okeke's study was based on caregivers of under five children and so it is not surprising that women who are the natural providers of care and nurture for this age group were in the majority. The findings in Auta's study where male

respondents were in the majority could be reflective of the enrolment pattern of pharmacy students at the university. Other contrasting patterns had been reported form southern Ethiopia, with 52% men, 48% women, 71% Muslims, 69.7% illiterate, 50.6% farmers and 77% married.[6] Jaina et al also reported 64.3% male respondents and 35.7% female respondents from Haryana, India.[12] However, their study was carried out in a predominantly male community, where a male child was preferred, and some parents engaged in selective abortion of female foetuses. The almost equal ratio of male to female respondents in our study may be reflective of the ubiquitous nature of fever and the study population. Fever is a sign that is found in many ailments irrespective of age and gender. The study was not restricted to any particular ailment that is peculiar to any age group or sex. It would be expected that studies that are children-based or are related to maternal health might indicate higher utilization of health care by women.

Up to 81% of the respondents had secondary education and above. This is much higher than the 56.6% of respondents found for the same group in a study of self-medication in adults (market women) by Afolabi, and 67% by Omolase et al in Owo.[13,15] Okeke et al found 15% respondents who attained secondary education in South Eastern Nigeria.[4] Out study, was sited in urban Jos where reported adult literacy level is almost 78%.[17]
Majority of the respondents (88.6%) were Christians while only 11.4% were Muslims (Table 1). This is similar to 85% Christian and 15% Muslim respondents found by Omolase in Owo.[15] Okeke et al found 94% Christian respondents in Enugu state, South Eastern Nigeria.[4] Both Owo and Enugu south Eastern Nigeria are known to be predominantly Christian areas. Also, Plateau state of which Jos is the capital is generally regarded as a Christian state. Moreover, the study centre is a Christian hospital.

Almost 80% of the respondents were married. The number is much higher than the 65% married respondents in a similar study found by Omolase in Owo but lower than 87.3% married respondents found by Agu and Nwojiji.[15,18] This is most likely due to the fact that in our study, patients who were less than 18 years of age were represented by adult care givers who were more likely to be married.

The single commonest ethnic group was Igbo of south eastern Nigeria. This group is widely travelled in Nigeria for commerce and can be found in almost every community in Nigeria especially in the urban areas where commercial activities are pronounced. However, a study on impact of education on home treatment and prevention of malaria in Jengre, a community 40km away from Jos did not record any Igbo respondents.[19] The predominance of Igbos in this study could be due to the cosmopolitan and commercial nature of the study site, which is also located near a major Igbo ward within the city.

Majority of the respondents were civil servants (39%) or traders (31.2%). Similar patterns were reported by Omolase.[15] Okeke et al however found 64.3% farmers and 2% civil servants.[4] Okeke's study was sited in a rural area where farming and not civil service was the major occupation.

The two lowest income quantiles, earning less than 50,000 naira per month accounted for 77.3% of the respondents. A similar income level was reported by Arikpo et al from South Eastern Nigeria and Agu et al in Ebonyi state.[18,20] These figures are not surprising as up to 70% of Nigerians live below poverty line by 2010 estimates.[21]

The study showed that 85% of the respondents engaged in self-medication. A similar finding of 89% self-medication was reported by Omolase in Owo.[15] It also compares well with 89% reported by Afolabi et al in a study of self-treatment for fever in children prior to clinic attendance in Lagos, and 88.2% for self-medication for malaria reported in a similar study in a rural area in Enugu.[4,5] It is however much higher than the 46.8% reported from Makurdi.[22] It is also significantly less than the report by Arikpo (99.4%) for self-medication in a rural Nigerian community.[20] Lagos where Afolabi's study was done and Jos are both commercial/civil service centres with comparable sociodemographic characteristics, hence the similar findings. The Makurdi study was a retrospective study, based on recall and so could be open to bias. Arikpo's study was based in a rural area where lack of access to functional health facilities, poverty and illiteracy could constrain people to engage more in self-medication. In Sudan, 81.8% and 73.9% were reported for self-medication in two separate studies,[23,24] while 92% was reported for high school students in Kuwait.[25]

The respondents used mainly analgesics and anti-pyretics (78.2% each), followed by antimalarials (54.9%) for self-medication. Similar findings were reported in a study at a community hospital in Nigeria where analgesics (26.5%) and antimalarials (15.9%) were most commonly used.[15] Antibiotic self-medication occurred in 26.9% of the respondent. This is similar to the 25.3% reported in Owo.[15] Herbal drugs were used by 1.6% of the respondents. The

1.6% in this study is far less than the 39.2% reported from north east India and 60.2% for most Bwatiye mothers of north-eastern Nigeria who rely mostly on herbal preparations for treatment of feverish conditions in children.[6,26] The Indian and north-eastern Nigerian studies were rural based, where illiteracy, poverty and lack of easy access to medical facilities among other factors could make herbal treatment more attractive.

In this study, the preferred place of self-medication for majority (67.3%) of respondents was the Patent Medicine Store. This is more than the 52.3% reported by Okeke and Okafor from Ugwuogo-Nike, Enugu, 34.7% from Makurdi, 13.6% reported from Ebonyi state but comparable to 64.4% for antibiotic self-medication in Kano.[4,18,27,28] In this study, only 1.3% of the respondents engaged in use of native medication. In the study in Enugu by Okeke and Okafor, Makurdi and Ebonyi state, native medication use was prominent. Those who met their needs through native medication would not patronise Patent Medicine Stores. This could explain why less people patronised Patent Medicine Stores in those studies. Also, in the rural communities where the Enugu and Ebonyi studies were carried out, there was lack of adequate health facilities and where they existed, health personnel and services including Patent Medicine Stores were not readily available. Illiteracy and poverty made native medications affordable and attractive. These services were also readily available even at odd hours to the 'convenience' of some of the respondents. However, the Kano study was on antibiotic use by an enlightened student group. Native medication was relatively low. This could explain the comparable findings to the current study in terms of access to Patent Medicine Stores.

The study showed that 75.7% of the respondents took a medication step within 24 hours of the onset of fever. This is far more than the 12% reported from southern Ethiopia in a similar study but less than the goal of 80% access to appropriate antimalarial within 24 hours of the onset of fever by the Roll Back Malaria partnership to reduce malaria mortality by 50%, although not all the cases were presumed to be malaria. It is even worse considering that 85% of them engaged in uncontrolled self-medication.[7,29] The Ethiopian study was done with a peasant population which was organised into groups called associations. Majority of them accessed treatment for febrile conditions from formal malaria programme outlets. Those who lived in the lowland or who had to walk more than one hour to access health care commenced treatment late. Thus, access and distance to treatment centres played a role in commencing treatment late.

Over half (51%) of the respondents waited for between three to seven days before presenting at the hospital. Only 14.4% of the respondents presented at the hospital within six hours and 37.8% within 24 hours. In a study in North East Nigeria, it was reported that 12.4% respondents took their children to a health facility for treatment about seven days after the commencement of fever.[26] On the other hand, in rural South Western Ethiopian community, a similar study revealed that the majority used health facilities.[7] This could have been possible because the study was for malaria and there was a well organised malaria programme with treatment outlets. The delayed presentation at BHUTH in this study, could be explained by attempt to wait for the outcome of earlier self-medication before seeking treatment in the hospital.

The results showed that 23.4% of the respondents used one treatment modality before presenting to the hospital at the study centre, 25.6% used two treatment modalities and 23.1% used three treatment modalities before presenting at the study centre. Akogun et al reported in a North East Nigerian study that presentation at the hospital was a third line of action.[26] The primary action was to ignore the febrile child and if he did not improve he was strapped to the back. The second line of action was self-medication mainly with herbs. It is only those who did not improve at this stage that might consult health personnel. On the other hand, in the South West Ethiopian study, 63.6% accessed health facilities after two days.[7] Overall, 80% of the respondents accessed treatment in health facilities with or without prior self-medication. Treatment was initiated by 52.3% of the respondents within two days.

Various causes were given by the respondents for acute febrile illness. Similar findings have been reported by Okeke and Okafor from Enugu in a study of under five children with fever.[4] However, 90.6% of them identified mosquito bite as a cause of acute febrile illness. This is higher than previously reported by Okeke in Enugu state, but consistent with WHO presumptive diagnosis of malaria in the presence of fever in malaria endemic areas like Jos, Nigeria especially for groups at risk.[4] In Okeke's study, although 63.7% of the respondents identified malaria as the cause of fever, only 37.3% associated malaria with mosquito bite. Agu et al found 35.2% of respondents identifying mosquito bite as a cause of malaria fever.[18] The higher number of respondents associating mosquito bite with fever in this current study has a more positive outlook for the control of mosquitoes as a major step in preventing malaria. The respondents demonstrated a high index of suspicion for malaria in acute feverish conditions.

This was also reflected in their choice of medication where analgesic (78.2%), antipyretic (78.2%) and antimalarials (54.9%) were the most commonly used medications. Studies have however shown this to be responsible for needless over-diagnosis and treatment of malaria while ignoring other causes of fever.[30] Also, there have been conflicting reports of patients' choice of drugs for self-medication being related to diagnosis. Afolabi et al reported from Owo that the choice of medication was mainly determined by the major complaint (fevers were associated with antimalarial drugs and analgesics (antipyretics), cough was associated with cough syrup and analgesics, while diarrhoea was associated with antidiarrhoeal drugs).[13] On the other hand, Arikpo et al reported from a rural community in South-East Nigeria that no specific drugs were used for specific ailments in self-medication.[20] Other causes of fever identified by the respondents in this study were contaminated food (12.9%), water (12.7%), dirty environment (8.5%), stress (3.6%), change of weather (3.6%), cold (3.2%) etc. The 3.2% reported for cold in this study is far less than 19.3% reported by Okeke and Okafor for cold.[4] The less attention given to cold by the respondents in this study, could be explained by the fact that Jos has relatively cold temperatures for most of the year and so the residents were less likely to see it as a problem.

Lower income (<N9,600/month) was a significant predictor of self-medication. Similarly, patients were more likely than caregivers to self-medicate for febrile illness. There was however no significant statistical association between age, sex, religion, marital status, educational level and occupation and self-medication for acute febrile illness in the study.

Low income was found to be significantly associated with self medication for febrile illness in Makurdi, North Central Nigertia, Itao Ijaiye, South Western Nigeria and in Northeast India .[13,14,22] In contrast to these studies, we did not find significant association with age, gender, occupation, educational level, marital status, religion, place of residence, race, culture, ethnicity and distance of nearest health centre.

The northeast India study was in a rural area, but it also showed there was no significant association of education and gender of patients with self-medication which is in agreement with some findings in our study. Our study suggests that the quality of health seaking decisions made is significantly affected by who is making those decisions: whether the patient or a care giver. The lack of association between many sociodemographic factors and self-medication in our study could be explained by the fact that the study was sited in a major city where there are good roads, adequate access to numerous health facilities and illiteracy is not very common.[17]

Our study is limited by the fact that it was based on self-reported information or recall by the patient and so could be open to bias. Also, the study was hospital based, hence caution should be exercised in applying the findings to the general community.

CONCLUSION

This study revealed a high (85%) prevalence of self-medication for acute febrile illness among the respondents. The drugs mostly used were analgesics, antipyretics and antimalarials, and the Patent Medicine Store was the commonest source (67.2%). Lower income and patients rather than caregivers, were significant predictors of self-medication practice. This requires physicians managing patients presenting with acute febrile illness to be aware that a vast majority practice self-medication in an uncontrolled manner. Particular attention also needs to be paid to those most likely to self-medicate. These findings also give an idea of the scope of advocacy required to enforce relevant legislation on mediations and thereby achieve responsible self-medication.

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CONFLICT OF INTEREST

The authors have no conflict of interest to report.

REFERENCES

1. Kieglast PJ, Jamison AJ, Hoek AJM, Reinstein JA. Responsible Self- Medication: Joint Statement by International Pharmaceutical Federation and World Self-medication Industry. 10th June, 1999, p1. http://www.wsmi.org/pdf/fip.pdf. Accessed 22-3-2012
2. Mehra S, Meek S, Boughton J, Vaderick C, Sintasath D: Malaria Consortium. Childhood Illnesses. Accessed 20/02/2012 from http://www.malariaconsortium.org/pages/childhood_illnesses.htm, 2012.
3. Oshikoya KA, Njokanma OF, Bello JA, Ayorinde EO; Family self-medication for children in an urban area of Nigeria**.** Paediatric and Perinatal Drug Therapy, 2007; 8(3):124-30
4. Okeke TA and Okafor HU. Perception and Treatment Seeking Behavior for Malaria in Rural Nigeria: Implications for Control. J Hum

Ecol. 2008; 24(3):215-22.
5. Afolabi1 BM, Brieger WR, Salako LA. Management of Childhood Febrile Illness Prior to Clinic Attendance in Urban Nigeria. J Health popul nutr 2004; 22(1):46-51
6. Chaturvedi HK, Mahanta J, Pandey A. Treatment-seeking for febrile illness in North-East India: an epidemiological study in the malaria endemic zone. Malar J 2009; 8:30.
7. Deressa W, Ali A, Enqusellassie F. Self-treatment of malaria in rural communities, Butajira, southern Ethiopia. Bull World Health organ. 2003; 81(4):261-8.
8. Axelrod YK, Diringer MN. Temperature management in acute neurologic disorders. Neurol Clin. 2008; 26 (2):585-603.
9. Campbell TL. The effectiveness of family interventions of physical disorders; Journal of Marital and Family Therapy. 2003; 29(2):263-81.
10. Pequegnat W, Bray JH. Families and HIV/AIDS: Introduction to the special section. Journal of Family Psychology, 1997; 11(1):3-10.
11. Chukwuocha AN, Chukwuocha UM. The continued relevance of home management of malaria strategy in the effective and sustainable control of malaria in endemic areas; Scientific Research and Essays 2011; 6(33): 6748-53.
12. Jaina p, Sachanb A, Singlac RK, Agrawala P. Statistical Study on Self Medication Pattern in Haryana, India. Indo Global Journal of Pharmaceutical Sciences, 2012; 2(1):21-35.
13. Afolabi AO: Factors influencing the pattern of self-medication in an adult Nigerian population; Ann Afr Med. 2008; 7(3):120-7.
14. Chaturvedi HK, Mahanta J, Pandey A. Treatment-seeking for febrile illness in north-east India: an epidemiological study in the malaria endemic zone. Malar J. 2009;8:301.
15. Omolase CO, Adeleke OE, Afolabi AO, Afolabi OT. Self medication amongst general outpatients in a Nigerian community hospital. Annals of Ibadan Postgraduate Medicine. 2007;5(2):64-7.
16. Auta A, Banwat SB, Sariem CN, Shalkur D, Atuluku MO; Medicines in pharmacy students' residence and self-medication Practices; Journal of Young Pharmacists. 2012; 4(2):119–23.
17. National bureau of statistics. National literacy survey. 2010; P75. Available at www.nigerianstat.gov.ng. Retrieved on 29/11/2013.
18. Agu AP, Nwojiji JO. Childhood malaria: mothers' perception and treatment seeking behaviour in a community in Ebonyi State, South East Nigeria. Journal of Community Medicine and Primary Health Care. 2005; 17(1):45-50.
19. Chirdan OO, Zoakah AI, Ejembi CL. Impact of health education on home treatment and prevention of malaria in Jengre, north central Nigeria. Ann Afr Med. 2008; 7(3):112-9.
20. Arikpo GE, Eja ME, Enyi-Idoh KH: Self Medication in Rural Africa: The Nigerian Experience. The Internet Journal of Health. 2010; 11(1).
21. CIA. world factbook: population below poverty line. 2010. Available @ WorldFactbook. htm#wfbtop. Accessed on 17/12/2013.
22. Jombo GTA, Mbaawuaga EM, Denen AP, Alao OO, Peters EJ, Dauda MA. Choices of drugs for self-treatment of malaria among adult women in a Nigerian city: Implications for the success of the on-going 'roll back' malaria programme. Journal of Microbiology and Antimicrobials 2010;2(6):57-63.
23. Awad A, Eltayeb I, Matowe L, Thalib L. Self-medication with antibiotics and anti malarials in the Community of Khartoum State, Sudan. J Pharm. Pharmaceut Sci. 2005;8(2):326 -31.
24. Awad AI, Eltayeb IB, Capps PA. Self-medication practices in Khartoum State, Sudan. Eur J Clin. Pharmacol. 2006; 62(4):317-24.
25. Abahussain E, Motowe LK, Nicholls PJ. Self-report medication use among adolescents in Kuwait. Medical principles and practice 2005; 14(3):161-4.
26. Akogun OB, John KK. Illness-related practices for the management of childhood malaria among the Bwatiye people of North-Eastern Nigeria. Malaria J. 2005; 4(1):13-8.
27. Noah L. Treat yourself: is self-medication the prescription for what ails American health care? Harvard Journal of Law & Technology. 2006; 19(2):359.
28. Tamuno I, Mohammed IS. Self-Medication with Antibiotics amongst Students of a Nigerian Tertiary Institution. J. Basic. Appl. Sci. Res. 2011; 1(10):1319-26.
29. RBM: Global Strategic Plan: Roll Back Malaria 2005-2015. Geneva: Roll Back Malaria Partnership; 2005.
30. Afrane YA, Zhou G, Githeko AK, Yan G (2013) Utility of Health Facility-based Malaria Data for Malaria Surveillance. PLoS ONE 8(2): e54305.