To the Editors:

Practice of self-medication with antibiotics in the Colombo district, Sri Lanka

G P S G Senadheera[1,3], **S Sri Ranganathan**[3], **N S Gunawardane**[4], **G H Fernando**[2], **B M R Fernandopulle**[5]

Self-medication is defined as "the use of drugs to treat self-diagnosed disorders or symptoms or the intermittent or continued use of a prescribed drug for chronic or recurrent disease or symptoms" [1]. Self-medication with antibiotics (SMA) may lead to antibiotic resistance as the consumed antibiotic could be incorrect, inappropriate, excessive, unnecessary or inadequate. This study aims to determine the period prevalence of SMA in the Colombo District and to describe the reasons for SMA, its utilization pattern and socio-economical determinants.

A cross-sectional descriptive community survey was conducted in the Colombo District. The study population comprised of adults over 18 years who have been residing in the Colombo district for at least a month before data collection and judged to be competent to respond to the questionnaire.

Sample size was determined by the formula to estimate a population proportion [2]. Prevalence of SMA in Colombo was assumed to be 50%. A design effect of 1.5 was incorported to account for the cluster sampling technique and a further 5% was added for non-responders. The estimated sample size of 605 was adequate to estimate the prevalence to within 5% with 95% confidence.

Colombo District is divided into 13 Divisional Secretariats (DS) and 557 Gramaniladari divisions (GNDs). Twenty four GNDs were included using probability proportional to size sampling technique from six randomly selected DS divisions. From each GND, 25 households were selected. The index household was randomly selected using the voters' list. Houses located on the same side of the road were included till 25 were recruited and one eligible adult was randomly selected from each of the 25 households using a systematic grid. Data were collected using an interviewer administered questionnaire after getting informed written consent. The study was conducted over a two month period in early 2015.

The questionnaire was developed by analysing previous studies and by consulting experts. It included both open and close ended questions on demographic data, practice of SMA and its co-variants. Face and content validity of the questionnaire was established. Questionnaire was pre-tested and data collection process was piloted.

Data were analysed using Statistical Package for the Social Sciences (SPSS) version 17. Both descriptive and inferential statistics were employed. Prevalence of SMA was calculated by dividing the number who used an antibiotic without a valid prescription (SMA) in the last 3 months by the total respondent. Valid prescription was defined as that issued by a medical practitioner or dentist registered under the medical ordinance. Antibiotic use was meticulously verified by many ways; asking to name the antibiotic, posing indirect questions, checking the left over medicines, by inspecting empty bottles, envelopes, or old prescriptions. Ethical approval was obtained from the Ethics Review Committee of Faculty of Medicine, University of Colombo (EC-14-035).

Of the 607 respondents, 158 (26%) had used an antibiotic during last 3 months, of them 118 had a valid prescription and 41 had self-medicated. The period prevalence of SMA was 6.8% (95% CI=4.89-9.05); 6% in women and 8.4% in men. In men, prevalence of SMA was relatively higher in employed individuals (10.6%) than in students (7.7%), but it was the opposite in women (8.7% vs. 14.3%). A systematic review from 19 developing countries over a period of 10 years (2002-2012) reported a prevalence of SMA of 38.8% [4]. Compared to which

Departments of [1] *Allied Health Sciences and* [2] *Pharmacology, Faculty of Medical Sciences, University of Sri Jayewardenepura, Departments of* [3] *Pharmacology and* [4] *Community Medicine, Faculty of Medicine, University of Colombo,* [5] *Department of Para clinical, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka.*

Correspondence: GPSGS, *e-mail: <savini@sjp.ac.lk>. Received 29 September 2016 and revised version accepted 23 January 2017.*

SMA in our study population appears to be low even after leaving allowances for methodological differences. This low prevalence of SMA in the Colombo District may have been due to easy accessibility to state or private hospitals and clinics.

A relatively large number (N=371, 61%) claimed they knew the term antibiotic, however only 149 (24.5%) managed to name an antibiotic correctly. Ten percent named brand names of paracetamol and chlorpheniramine as antibiotics. Amoxicillin was the most commonly known antibiotic (92%).

Table 1 shows SMA in different demographic and socioeconomic groups. Prevalence of SMA was significantly related to younger age of 18-34 years (χ^2=8.680, df=1, p=0.003), being employed (χ^2=4.581, df=1, p=0.032), an education level above G.C.E. A/L (χ^2=11.870, df=1, p=0.001) and being able to name an antibiotic correctly (χ^2=16.889, df=1, p<0.001).

However when binary logistic regression analysis was done to control confounding effects, only age between 18-34 years (OR 2.68, p=0.013) and being able to name an antibiotic correctly (OR 2.96, p=0.002) were associated with SMA.

The 41 respondents who self-medicated used a range of different antibiotics with some taking more than one antibiotic. Majority had taken amoxicillin (N =34, 82.9%), few had taken cephalexin, phenoxymethyl-penicillin, azithromycin, nitrofurantoin, cloxacillin, co-amoxiclav, clarithromycin or erythromycin. Median duration of SMA was 3 days (1-7 days). Only 25% of those self-medicating with amoxicillin had taken it inappropriately. The majority claimed that they SMA for upper respiratory symptoms (68%), fever (19.5%), wounds (9.8%) or urinary symptoms (2%). Table 2 describes reasons for SMA, source of antibiotic, guidance for SMA, factors considered in selecting an antibiotic, source of instructions and decision to stop the antibiotic.

Table 1. Distribution of self-medication with antibiotics by different demographic and socioeconomic characteristics

Characteristic	Self-medicated (N= 41)		Non self-medicated (N= 566)		Total (N= 607)	OR(95% CI)	
Sex							
Female*	25	(6)	392	(94.0)	417	1.44	(0.75-2.77)
Male	16	(8.4)	174	(91.6)	190		
Age group in years							
18-34	19	(11.7)	143	(88.3)	162	2.56(1.346-4.86)	
35 and above *	22	(4.9)	423	(95.1)	445		
Education level							
Up to GCE O/L*	14	(3.9)	348	(96.8)	362	3.08(1.58-6.00)	
A/L above	37	(11.0)	218	(89.7)	245		
Employment status							
Employed	21	(9.7)	196	(90.3)	217	1.98(1.05-3.75)	
Unemployed *	13	(4.9)	252	(95.1)	265		
Having medical insurance or reimbursement for medical claim							
Yes	14	(10.2)	123	(89.8)	137	1.87(0.95-3.67)	
No*	27	(5.7)	443	(94.3)	470		
Received medical treatment in the last three months							
Yes*	12	(5.5)	207	(94.5)	219	1.39(0.67-2.79)	
No	29	(7.5)	359	(92.5)	388		
Able to name an antibiotic							
Yes*	21	(14.1)	128	(85.9)	149	0.28(0.15-0.53)	
No	20	(4.4)	438	(95.6)	458		
Monthly average income of the family in LKRs							
25000 and less	15	(5.1)	277	(94.9)	292	0.55(0.28-1.05)	
25001 and above *	26	(9.0)	262	(91)	288		
Household Size							
1-4	19	(5.8)	306	(94.2)	325	0.73(0.39-1.39)	
5-12*	22	(7.8)	260	(92.2)	282		

Table 2. Pattern of ABA self-medication during last three months of the respondents of Colombo district (N = 41)*

Variable Reason for self - medication	Frequency	%
Convenience	36	87.8
Past experience	33	80.5
Illness is mild	29	70.7
Easy to buy from pharmacy	20	48.8
My own knowledge	13	31.7
Cost saving	13	31.7
Drugs available in home	6	14.6
Doctor is far away	2	4.9
Source of obtaining antibiotics		
Pharmacy	36	87.8
Left over from previous prescription given to another person	7	17.1
Left over from previous prescription	6	14.6
Contact in hospital	1	2.4
From friend	1	2.4
The guidance for self-medication		
Own experience	32	78.0
Previous prescription given to me	13	31.7
Pharmacist	12	29.3
Previous prescription given to family member	5	12.2
Opinion by friend/neighbour	4	9.8
Internet/drug information	4	9.8
Selection of particular ABM		
From past experience	24	58.5
Illness	18	43.9
Type of antibiotic	10	24.4
Brand of antibiotic	10	24.4
Price of antibiotics	6	14.6
Instructions of the pharmacist	5	12.2
Adverse reaction safety	4	9.8
Side effects	3	7.3
From TV program/etc	1	2.4
Dosing instructions obtained from		
From pharmacist	26	63.4
Previous experience	23	56.1
Product information leaflet	3	7.3
From doctor	1	2.4
From internet	1	2.4
My own knowledge	6	14.6
From a friend	1	2.4
Decision to stop ABM		
Symptoms disappear	35	85.4
After Antibiotics ran out	5	12.2
Few days after recovery	2	4.9
Consulting the pharmacist /doctor	1	2.4
Completion of the course	2	4.9

Antibiotics cannot be dispensed without a valid prescription in Sri Lanka as they are categorised as prescription only medicine. As shown in table 2 pharmacists have contributed to this irrational practice of SMA in majority of instances (90%). Community pharmacist have guided the public in SMA and provided information about selecting a particular antibiotic and dosing instructions. Despite the "pharmacists" providing dosing instructions, about 85% have stopped the antibiotic when the symptoms disappeared. Previous studies have also identified community pharmacists as the leading source for SMA [3,4].

The leading symptoms which led to SMA were respiratory symptoms, fever, wounds and urinary symptoms: This observation is similar to reports from other studies [3,4].

Almost one third had used previous prescriptions to buy antibiotics. Antibiotic prescriptions prescribed previously for mild self-limiting diseases have also been identified as one of the risk factor for subsequent SMA.

Our study has provided data about the practice of SMA in Colombo district and identified an important area to be addressed in antibiotic stewardship programmes.

Conflicts of interest

There are no conflicts of interest.

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