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Assessment of problems related to self-medication with antibiotics and analgesics in freetown

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Abstract
Introduction: The purpose of this study was to assess problems related with self – medication with antibiotics and analgesics in Freetown.
Objectives: The objective of the study was to identify the frequency of occurrence of various MRPs, their causes and the demographic factors influencing drug choice and mrps
Method: The study was done using an adapted version Pharmaceutical Care Network of Europe (PCNE) Classification System as instrument. The classification is for use in research into the nature, prevalence, and incidence of MRPs and also as a process indicator in experimental studies of Pharmaceutical Care outcomes.
A sample of 282 respondents was taken using convenient sample method.the instrument was administered in a personal interview
Ethical approval was obtained from the Research and Ethics Committee of the College of Medicine and Allied Health Sciences – Freetown.
Results obtained: Drug choice problems accounted for 76 % of MRPs. A good number of participants selected a medication that was inappropriate (64.5%) and a significant proportion of participants (47.2 percent) were insufficiently aware of health and diseases. Erroneous assumptions were common. Inappropriate drug and insufficient awareness of health and diseases were very frequently occurring problems.
Discussion: It was evident from this study that a lot of irrational drug use occurs in self-medication. People hold strong unscientific and in some cases totally irrational perceptions on the uses, doses, effects of various medications.
A total number of 184 cases were resolved, showing that, where problems could be identified, the interventions were effective and that drug related problems can be minimized via effective counseling and pharmaceutical care.
Conclusion: It was concluded from the study that MRPs abound in self-medication even amongst educated people, but the availability of health care professionals who are ready to render pharmaceutical care and counselling can significantly minimize the occurrence.

Keywords: assessment, problems, self-medication

Introduction

Self-Medication, Self-Care and Self-Prescription

Self-medication describes treatment that is initiated and managed by the individual rather than prescribed by a health professional. While the term is generally used in relation to minor ailments it can also apply to intermittent and chronic conditions [1].
Sharma, *et al.* [2] explained that it is not all conditions of self-medication that are not desirable. They observed that self-medication or the use of non-prescription drugs could be beneficial to patients, healthcare professionals, the pharmaceutical industry and governments, provided these drugs are used rationally
In a study conducted to ascertain the prevalence of self-medication with antimicrobial agents among patients attending a clinic for the treatment of sexually transmitted diseases (STDs) [4], self-medication with antimicrobial agents (usually β-lactam agents or tetracyclines) was common among the clinic attendees but self-report could not be relied upon for appropriate screening.
A prospective study of pharmacist interventions (PIs) was conducted in six French hospitals [5] in order to document clinical pharmacists' daily routine interventions on the type of drugs and situations most frequently associated with medication-related problems (MRPs) and to estimate physicians' acceptance of pharmacist interventions (PIs). The study revealed that a few types of drugs and errors constitute a substantial proportion of the intervention.
A study was conducted in Germany to identify the extent of MRPs encountered in community pharmacies [6]. A broad spectrum of MRPs was identified, with 9 of 10 cases involving prescribed medicines. MRPs arose on three primary levels: the prescription-, the patient-, and at the delivery point. Essentially, drug-drug interactions were the most frequently reported MRPs (8.6%) and the respondents indicated that more than 80% of identified MRPs could be resolved completely.
In a study conducted by a report of a Working Party of the British Society for Antimicrobial Chemotherapy [16] it was concluded that the availability of antimicrobial agents for self-

medication may increase and could include antibacterial agents for oral or topical use.

In a study done by Shankar *et al.* [17] in the economically deprived community of Nepal it was observed that most episodes of illnesses were treated by self-medication [18, 19]. In India, another south Asian country with economic and cultural similarities to Nepal, pharmacists and pharmacy attendants play an important role in fostering self-medication among the public [20]. Combination preparations containing 'hidden' classes of drugs and food supplements or tonics of doubtful value were commonly used in India [21]. Similar results were reported in other developing countries [22].

Shankar *et al.* [17] concluded that self-medication is prevalent in the Pokhara valley with 59% of respondents using some form of self-medication in the six-month period preceding the study.

Materials and Methods

The Pharmaceutical Care Network of Europe (PCNE) Classification System was adopted for data collection for this study.

The classification is used in research into the nature, prevalence, and incidence of MRPs and also as a process indicator in experimental studies of Pharmaceutical Care outcomes [23]. It is also meant to help health care professionals to document MRPs-information in the pharmaceutical care process.

The hierarchical classification is based upon similar work in the field, but it differs from existing systems because it separates the problems from the causes.

The basic classification now has 6 primary domains for problems –that is the main categories of medication related problems, 6 primary domains for causes-that is the main categories or main domains of the causes of these medication related problems, and 5 primary domains for Interventions – that is attempts to reverse or minimize the MRPs by health care professionals and 3 primary domains for outcomes- that is the outcomes of the interventions, whether they were successful or not and to what extent.

However, on a more detailed level there are 21 grouped sub domains for problems, 33 grouped sub domains for causes and 17 grouped sub domains for interventions. The fourth primary domain is the outcomes which are subdivided into 4 sub-domains.

A sample of 282 respondents was taken using convenient sample method. Two pharmacies each were selected from the east, central and west end of Freetown via simple random sampling. A government hospital pharmacy in the west end of Freetown was also selected via simple random sampling.

When a patient requested for an antibiotic /analgesic, he or she was interviewed appropriately in order to identify any medication related problems – these questions were included – what do you want to use the medicine for, at what dosage, for how long, would you be taking it along with any other medication, if yes what other medication. Have you been taking this medication before? If yes did you experience any adverse effect?

These questions identified medication related problems. Consent of the respondent was then requested at this point. If consent was given, it was then documented using the consent form and the counselling continued to ascertain age, and the possible causes of the problems, for which there was also a section in the research instrument. All of this information was documented using the research instrument.

The phone number of the patient was noted and he/she was followed up by means of a phone call within 4-7 days depending on the medication /indication to ascertain, outcome of interventions.

Ethical Consideration

Ethical approval was obtained from the Research Ethics Committee of the College of Medicine and Allied Health Sciences – Freetown. In each case the consent of the respondent was obtained, age and sex of the patients were recorded. However specific patient identifiers were not recorded.

Sample Size

Of the 352 subjects whose participation was sought 282 consented to participate with the documentation and counseling. Therefore a convenience sample size of 282 respondents was used in the study.

Research Setting

The study was conducted in six community pharmacies (two from the east end, two from central and two from the west end of Freetown) and one government hospital pharmacy located in the west end of Freetown.

Research assistants were trained in the use of the research instrument and the respondents were interviewed and counselled by the Researcher and Research ass

Results

Table 1: Distribution of Medication type by age

Drug Type	Sex		Age group												
	M	F	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	Total
Antibiotic	69	76	3	19	29	32	25	21	7	4	0	4	0	1	145
Analgesics	73	57	5	10	24	11	18	21	9	7	5	17	2	1	130

Table 2: Percentage distribution of medication related problem

Sub-domain	Frequency	Percent
Side effect suffered (non-allergic)	19	6.7
Side effect suffered (allergic)	6	2.1
Toxic effect suffered	9	3.2
Inappropriate drug (not most appropriate for indication)	182	64.5
Inappropriate drug form (not most appropriate for indication)	32	11.3
Inappropriate duplication of therapeutic group or active ingredient	25	8.9
Contra-indication for drug (incl. pregnancy or breastfeeding	15	5.3
No clear indication for drug use	42	14.9
No drug requested but clear indication	17	6.0
Drug dose too low or dosage regime not frequent enough	46	16.3
Drug dose too high or dosage regime too frequent	51	18.1
Duration of treatment too short	71	25.2
Duration of treatment too long	2	0.7
Drug not taken/administered at all	1	0.4
Wrong drug taken/administered	43	15.2
Potential Interaction	8	2.8
Manifest Interaction	5	1.8
Patient dissatisfied with therapy despite taking drug(s) correctly	30	10.6
Insufficient awareness of health and diseases (leading to future problem)	133	47.2
Unclear Complaints. further clarification necessary	11	3.9
Therapy failure (reason unknown)	1	0.4

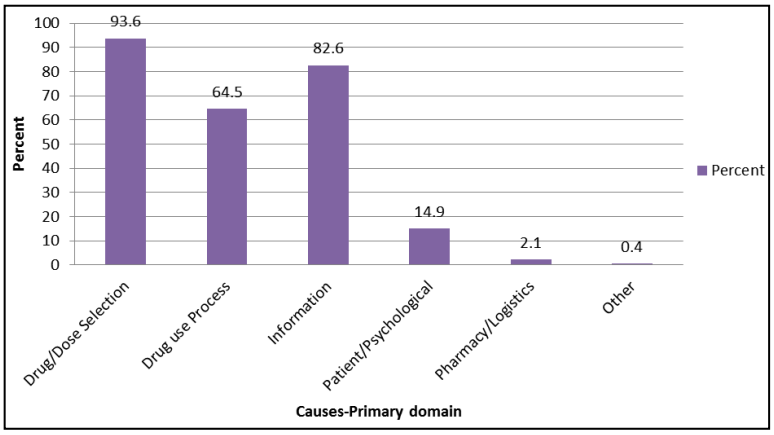

Fig 1: Percentage distribution of Causes of medication related problems in primary domain

Table 3: Percentage distribution of Causes of medication related problem sub- domain

Sub-domain	Frequency	Percent
Inappropriate drug selection	182	64.5
Inappropriate dosage selection	146	51.8
More cost-effective drug available	2	0.7
Pharmacokinetic problems, incl. aging/deterioration in organ function	1	0.4
Synergistic/preventive drug required and not given	5	1.8
Deterioration/improvement of disease state	1	0.4
New symptom or indication revealed/presented	2	0.7
Manifest side effect, no other cause	1	0.4
Inappropriate timing of administration and/or dosing intervals	82	29.1
Drug underused/under-administered	11	3.9
Drug overused/ over-administered	81	28.7
Therapeutic drug level not monitored	3	1.1
Drug abused(unregulated overuse)	27	9.6
Patient unable to use drug/form as directed	1	0.4
Instructions for use/taking not known	110	39.0
Patient unaware of reason for drug treatment	151	53.5
Patient has difficulties reading/understanding patient information form	12	4.3
Patient unable to understand local language	0	0.0
Lack of communication between healthcare professionals	14	5.0

Patient forgets to use/take drug	0	0.0
Patient has concerns with drugs	0	0.0
Patient suspects side-effect	34	12.1
Patient unwilling to carry financial costs	0	0.0
Patient unwilling to change drugs	2	0.7
Patient unwilling to adapt life-style	1	0.4
Burden of therapy	0	0.0
Treatment not in line with health beliefs	0	0.0
Patient takes food that interacts with drugs	0	0.0
Prescribed drug not available(anymore)	0	0.0
Prescribing error(only in case of slip of the pen)	0	0.0
Dispensing error(wrong drug or dose dispensed)	6	2.1
Other cause; specify	0	0.0
No obvious cause	1	0.4

Table 4: Self-medication antibiotics compared with analgesics

Medication Type		Drug Related Causes(Main domain)					
		C1	C2	C3	C4	C5	C6
Antibiotic	f	136	97	124	28	5	0
	%	51.5	53.3	53.2	66.7	83.3	0.0
Analgesics	f	121	81	103	13	1	1
	%	45.8	44.5	44.2	31.0	16.7	100
Antibiotic & Analgesics	f	7	4	6	1	0	0
	%	2.7	2.2	2.6	2.3	0.0	0.0
Total	f	264	182	233	42	6	1
	%	100	100	100	100	100	100

Table 5: Frequency distribution of medication related problem by medication type, main domain and sub-domain

Medication type	Adverse reaction			Drug choice problem						Dosing problem				Drug use		Interaction		Others			
	P11	P12	P13	P21	P22	P23	P24	P25	P26	P31	P32	P33	P34	P41	P42	P51	P52	P61	P62	P63	P64
Antibiotic	6	4	6	103	19	6	6	33	12	32	25	44	0	0	24	5	5	18	74	10	11
Analgesics	13	2	3	73	12	19	9	9	4	14	24	26	2	0	15	3	0	11	56	1	00
Antibiotic & Analgesics	0	0	0	6	1	0	0	0	1	0	2	1	0	1	4	0	0	1	3	0	00
Total	**19**	**6**	**9**	**182**	**32**	**25**	**15**	**42**	**17**	**46**	**51**	**71**	**2**	**1**	**43**	**8**	**5**	**30**	**133**	**11**	**111**

Table 6: Percentage distribution of medication related problems in the Primary Domain

Primary Domain	Frequency	Percentage
Adverse Reaction	33	11.7
Drug Choice Problem	214	75.9
Dosing Problem	147	52.1
Drug use Problem	42	14.9
Interaction	9	3.2
Others (Patient factors and Therapy failure)	150	53.2

*figures add up to more than 100 percent because of multiple responses

In Table 6 - 75.9 percent of MRPs in the primary domain were due to drug choice problems, 52.1 percent due to dosing problems and 53.2 percent due to others. Where Others(patient factors and therapy failure) refer to any of the following: i) Patient dissatisfied with therapy despite taking drug(s) correctly ii) Insufficient awareness of health and diseases (possibly leading to future problems) iii) Unclear complaints, further clarification necessary iv) Therapy failure, reason unknown.

A good number of participants selected inappropriate medications (64.5%) and a significant proportion of participants (47.2 percent) were insufficiently aware their state of health and nature of illness. Majority of the patients did not understand the reason behind their choices, they just had a faint idea of the type of illness for which a particular drug can be used.

Inappropriate drug selection and inappropriate dosage selection were the most common sub-domain causes of MRPs. P 2.1 (Inappropriate drug/not most appropriate for indication) and P 6.2 (Insufficient awareness of health and diseases were the most common sub-domain problems. P 3.1 (drug dose too low or dosage regimen not frequent enough, duration of treatment too short, drug dose too high or dosage regimen too frequent were also common though to a lesser extent as compared to P 2.1 and P 6.2

C1 (drug/dose selection) and C3 (drug use process) were the most predominant primary domain causes of the MRPs in this study. Most of the self medicators either did not use the correct drug/dose or were overdosing or under dosing.

Discussion

A lot of irrational drug use occurs in self-medication. This leads to and is responsible to some extent for some of the MRPs in self-medication. Some of the claims and assumptions about uses of some medications have no logical/commonsense or rational justification.

It is obvious from this study that MRPs abound in self - medication and that people hold strong unscientific and in some cases totally irrational perceptions on the uses, doses and effects of various medications.

The greater percentages of the interventions were effective and hence successful- they were accepted by the patients and produced desired therapeutic outcomes.

A total number of184 cases were resolved, showing that, where problems could be identified, the interventions were effective and the drug related problems were minimized via effective counseling and pharmaceutical care.

More females(52.4%) requested for antibiotics than males (47.6%). Possible explanation for this are:

1. Females were observed to be using antibiotics for irrational purposes unique to their gender (as observed in the study) e.g. to facilitate menstrual flow
2. As a post-coital contraceptive,.
3. As an analgesic for menstrual pain.

Contraindications including breast feeding, pregnancy etc were low, possibly because pregnant women or breastfeeding mothers were visiting more of the government free health care settings or private gynecologists/obstetricians and were also aware of the need to self- medicate with caution when in such states.

A study was conducted in 2005 in Germany to identify the spectrum of MRPs encountered in community pharmacies [6]. Median time needed for solving a MRP was 5 minutes. It was concluded that Pharmacists in the community pharmacy setting are well suited to identify and resolve MRPs. That ensuring the proper use of both prescription and OTC drugs is one of the basic responsibilities of pharmacists and that this specific role of pharmacists within the healthcare system needs to be better appreciated. It was concluded that pharmacists are significant in preventing MRPs including those resulting from prescription drugs.

Analysis of variance tests done on the data obtained showed that sex by itself, age by itself and level of education does not affect P2.1 (Inappropriate drug choice selection problem), leading to the conclusion that the three variables individually does not have any influence on P2.1.However the analysis of variance did show that that informal educational level of patient and the combination of age and sex do influence the awareness of health and diseases of a patient.

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