RESEARCH ARTICLE

Study of the “Hospital Formularies” of different level hospitals based on the “World Health Organization - Essential Medicines List”

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ABSTRACT

Background: Health-care costs are continuously increasing and as a consequence access to quality pharmaceutical care for everyone is becoming less evident. This is partly due to the increased aging population, new technologies, and patient expectations. Therefore, the rationalization of pharmacotherapy is needed. Effective, safe, and economic drugs have to be selected, used, and monitored to ensure high-quality therapy at an acceptable price for as many people as possible.

Aims and Objectives: The aim of the study was to study the hospital formularies of different level hospitals based on the “World Health Organization (WHO) Essential Medicines List (EML).”

Materials and Methods: A cross-sectional observational study was planned to be conducted in the hospitals from primary, secondary, and tertiary health-care setups. In each health-care level, one hospital from government, charitable (except primary), and private sectors was selected. From each of the eight hospitals, the hospital formulary was collected, after the permission of the hospital authority. Formularies were compared with the “WHO EML.”

Results: Primary Health Care: Total number of drugs in the formulary of government sector was 108, and the same of the private sector was 171. Out of these, 74 (68.52%) drugs are from the WHO EML in government sector, while 81 (47.37%) drugs in the private sector. Secondary Health Care: Total number of drugs in the formulary of government sector was 147, and the same of charitable and private sectors were 314 and 1160, respectively. Out of these, 103 (70.07%) drugs are from the WHO-EML in government sector, 113 (35.99%) drugs in charitable sector, while 387 (33.36%) drugs in the private sector. Tertiary Health Care: Total number of drugs in the formulary of government sector was 209, and the same of charitable and private sectors were 944 and 730, respectively. Out of these, 115 (55.02%) drugs are from the WHO EML in government sector, 287 (30.40%) drugs in charitable sector, while 157 (21.51%) drugs in the private sector.

Conclusion: Effective management of Hospital Formularies by the means of structuring “Drugs and Therapeutic Committees,” selection of drugs to be included in the formulary on the basis of the WHO EML and adherence of clinicians to the formularies are the mainstays for the rational, effective, safe, and affordable health services to the patients.

KEY WORDS: Hospital Formulary; Essential Medicines; Rational Therapeutics

INTRODUCTION

The formulary process is critical to good health care and consists of developing and implementing - A formulary list Essential Medicines List (EML) consisting of the most cost-effective, safe, and locally available drugs of assured quality that will satisfy the health care needs of the majority
of the patients, a formulary manual containing summary information on medicines and standard treatment guidelines containing essential information on how to manage common diseases.\(^1\)

Essential medicines are those that satisfy the priority health-care needs of the population. They are selected with due regard to disease prevalence, evidence of efficacy, safety, and comparative cost-effectiveness. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price, the individual and the community can afford. The implementation of the concept of essential medicines is intended to be flexible and adaptable to many different situations; exactly which medicines are regarded as essential remains a national responsibility (WHO 2002a).

Health-care costs are continuously increasing and as consequence access to quality pharmaceutical care for everyone is becoming less evident. This is partly due to the increased aging population, new technologies, and patient expectations.

### Table 1: Analysis of formularies for primary care setup

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Government</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of drugs in the formulary (%)</td>
<td>108</td>
<td>171</td>
</tr>
<tr>
<td>From EML (WHO 2013) (%)</td>
<td>74 (68.52)</td>
<td>81 (47.37)</td>
</tr>
<tr>
<td>Drugs not from WHO 2013 (%)</td>
<td>34 (31.48)</td>
<td>90 (52.63)</td>
</tr>
<tr>
<td>From National essential drug list (NLEM 2011) (%)</td>
<td>89 (82.41)</td>
<td>89 (52.05)</td>
</tr>
<tr>
<td>Drugs not from NLEM 2011 (%)</td>
<td>19 (17.59)</td>
<td>82 (47.95)</td>
</tr>
</tbody>
</table>

### Table 2: Analysis of formularies for secondary care setup

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Government</th>
<th>Charitable</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of drugs in the formulary</td>
<td>147</td>
<td>314</td>
<td>1160</td>
</tr>
<tr>
<td>From EML (WHO 2013) (%)</td>
<td>103 (70.07)</td>
<td>113 (35.99)</td>
<td>387 (33.36)</td>
</tr>
<tr>
<td>Drugs not from WHO 2013 (%)</td>
<td>44 (29.93)</td>
<td>201 (64.01)</td>
<td>773 (66.64)</td>
</tr>
<tr>
<td>From National essential drug list (NLEM 2011) (%)</td>
<td>120 (81.63)</td>
<td>109 (34.71)</td>
<td>488 (42.07)</td>
</tr>
<tr>
<td>Drugs not from NLEM 2011 (%)</td>
<td>27 (18.37)</td>
<td>205 (65.29)</td>
<td>672 (57.93)</td>
</tr>
</tbody>
</table>

### Table 3: Analysis of formularies for tertiary care setup

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Government</th>
<th>Charitable</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of drugs in the formulary</td>
<td>209</td>
<td>944</td>
<td>730</td>
</tr>
<tr>
<td>From EML (WHO 2013) (%)</td>
<td>115 (55.02)</td>
<td>287 (30.40)</td>
<td>157 (21.51)</td>
</tr>
<tr>
<td>Drugs not from WHO 2013 (%)</td>
<td>94 (44.98)</td>
<td>657 (69.60)</td>
<td>573 (78.49)</td>
</tr>
<tr>
<td>From National essential drug list (NLEM 2011) (%)</td>
<td>127 (60.77)</td>
<td>323 (34.32)</td>
<td>151 (20.68)</td>
</tr>
<tr>
<td>Drugs not from NLEM 2011 (%)</td>
<td>82 (39.23)</td>
<td>621 (65.78)</td>
<td>579 (79.32)</td>
</tr>
</tbody>
</table>

Therefore, the rationalization of pharmacotherapy is needed. Effective, safe, and economic drugs have to be selected, used, and monitored to ensure high-quality therapy at an acceptable price for as many people as possible.\(^2\)

### Aim and Objective

The aim of the study was to study the hospital formularies of different level hospitals based on the “WHO EML.”

### MATERIALS AND METHODS

#### Design

A cross-sectional observational study was planned to be conducted in the hospitals from primary, secondary, and tertiary health-care setups. In each health-care level, one hospital from government, charitable (except primary), and private sectors was selected.

#### Methods

From each of the eight hospitals, the hospital formulary was collected, after the permission of the hospital authority. Formularies were compared with the “WHO EML.”

### RESULTS

In primary care set-up, total number of drugs in the formulary of government sector was 108, and the same of the private sector was 171.

Out of these, 74 (68.52\%) drugs are from the WHO EML and 89 (82.41\%) drugs are from National List of Essential Medicines (NLEM) in government sector, while 81 (47.37\%)
drugs are from the WHO EML and 89 (52.05%) drugs are from NLEM in Private sector [Table 1].

In secondary care setup, total number of drugs in the formulary of government sector was 147, and the same of charitable and private sectors was 314 and 1160, respectively.

Out of these, 103 (70.07%) drugs are from the WHO EML, and 120 (81.63%) drugs are from NLEM in government sector, 113 (35.99%) drugs are from WHO EML, and 109 (34.71%) drugs are from NLEM in charitable sector, while 387 (33.36%) drugs are from the WHO EML and 488 (42.07%) drugs are from NLEM in private sector [Table 2].

In tertiary care setup, total number of drugs in the formulary of government sector was 209, and the same of charitable and private sectors was 944 and 730, respectively.

Out of these, 115 (55.02%) drugs are from the WHO EML and 127 (60.77%) drugs are from NLEM in government sector, 287 (30.40%) drugs are from WHO EML and 323 (34.32%) drugs are from NLEM in charitable sector, while 157 (21.51%) drugs are from the WHO EML and 151 (20.68%) drugs are from NLEM in private sector [Table 3].

**DISCUSSION**

The hospital formularies were collected from all eight hospitals. They were compared with the “WHO EML 2013” and “NLEM 2011.”

In the primary health-care setup, government sector is having its own formulary, prepared by experts, on the line of essential drugs concept. It contains 108 medicines. Out of these, 68.52% medicines are listed in the WHO EML and 82.41% are listed in NLEM.

In the primary health-care setup, private sector is not having its own formal formulary. General practitioners prescribe and dispense some drugs; a list is frequently changed by them. There is no logic in the selection of the drugs to be kept in the dispensary. A list contains 171 medicines. Out of these, 47.37% medicines are listed in the WHO EML and 52.05% are listed in NLEM.

In the secondary health-care setup, government sector is having its own formulary, prepared by experts, on the line of essential drugs concept. It contains 147 medicines. Out of these, 70.07% medicines are listed in the WHO EML and 81.63% are listed in NLEM.

In the secondary healthcare setup, charitable sector is having its own medicines list to be dispensed from the pharmacy store. Selection of medicines is dependent on practicing consultants. A list is frequently changed by them. A list contains 314 medicines. Out of these, 35.99% medicines are listed in the WHO EML and 34.71% are listed in NLEM.

In the secondary health-care setup, private sector is having its own medicines list to be dispensed from the pharmacy store. Selection of medicines, here also, is dependent on practicing consultants. A list is frequently changed by them. A list contains 1160 medicines. Out of these, 33.36% medicines are listed in the WHO EML, and 42.07% are listed in NLEM.

In the tertiary health-care setup, government sector is having its own formulary, prepared by experts, on the line of essential drugs concept. It contains 209 medicines. Out of these, 55.02% medicines are listed in the WHO EML, and 60.77% are listed in NLEM.

In the tertiary health-care setup, charitable sector is having its own hospital formulary based on essential drugs concept. It is prepared by the experts in the field. A list contains 944 medicines. Out of these, 30.40% medicines are listed in the WHO EML, and 34.32% are listed in NLEM.

In the tertiary health-care setup, private sector is having its own medicines list to be dispensed from the pharmacy store. Selection of medicines, here also, is dependent on practicing consultants. A list is frequently changed by them. A list contains 730 medicines. Out of these, 21.51% medicines are listed in the WHO EML, and 20.68% are listed in NLEM.

Kasturba Hospital (Manipal) is a 1400 bedded tertiary care teaching hospital with different specialties. It was having more than 3000 brands and ancillary products in use. The hospital did not have a formulary of any kind. They started development of a formulary for the hospital and comparing it with the WHO Model Formulary. Monographs of the drugs were prepared as per the recommendation of Pharmacy and Therapeutic Committee of the hospital. Prepared hospital formulary consisted of 476 generic drugs of various categories and 95 fixed-dose combinations. Availability of brands varied from single to many. The drugs to be avoided or used with caution in renal failure, hepatic failure and in pregnancy were categorized and included in the formulary as additional information. The prepared hospital formulary was recommended for implementation in the hospital, which could thereby help as a tool to promote rational drug use.[1]

Worldwide, most hospitals use strategies to structure and limit spending on pharmacotherapy. Literature search reveals that drugs and therapeutics committees, which are traditionally in charge of promoting and managing rational pharmacotherapy, use various tools.[4,6] Formulary agreements, for example, are supposed to be highly effective. Most of the hospitals regard their agreements as “restrictive,” meaning that non-formulary prescriptions will not be honored in principle. Large hospitals are more likely to have restrictive agreements than small hospitals.[2]
Restrictive formulary agreements deprive the physician to his right and privilege to prescribe and obtain the brand of his choice.

Most important is the argument that formularies do not guarantee proper drug-choices for certain diseases. Intense pressure of pharmaceutical industries is mentioned as interference as well.[2]

CONCLUSION

Effective management of “Hospital Formularies” by the means of structuring “Drugs and Therapeutic Committees,” selection of drugs to be included in the formulary on the basis of the WHO EML and adherence of clinicians’ to the formularies are the mainstays for the rational, effective, safe, and affordable health services to the patients.

REFERENCES


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