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### Assessment of the Knowledge and Perceptions about Pharmacoeconomics among Medical postgraduate students and Healthcare professionals at a Tertiary care teaching hospital, Udaipur, India

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#### A B S T R A C T

Pharmacoeconomics is the measurement of both the costs (resource consumed) & consequences (clinical, economic, and humanistic) of therapeutic decision making. The per capita income of all middle class people is limited and the drug prices are growing extensively. Hence to satisfy the health care needs of majority of the people, knowledge of Pharmacoeconomics is essential to all healthcare professionals and medical postgraduates. Objective: To assess the knowledge and perceptions about Pharmacoeconomics among medical postgraduates and healthcare professionals. Methods: A questionnaire based cross sectional study was conducted in Geetanjali Medical College & Hospital among postgraduates and healthcare professionals about Pharmacoeconomics. The feedback was analyzed. Results: Seventy three respondents who were all present on the date of visit to the college and who were willing to participate in the study were included. Out of 73 respondents (PG's=31, Doctors=42) nobody has any academic exposure on Pharmacoeconomics and related concepts at undergraduate/ postgraduate level. Healthcare professionals who are holding administrative positions also never got the chance of getting trained in this field. 9.67% of the postgraduates and 19.04% of the doctors heard about Pharmacoeconomic evaluation techniques and 93.54% postgraduates and 95.23% of doctors believe that application of Pharmacoeconomic techniques will improve the performance of health care delivery system of India. Conclusion: Study has revealed that the knowledge and perception level of postgraduates and healthcare professionals in day to day use of Pharmacoeconomic concepts are poor and limited.

#### Introduction

Pharmacoeconomics is a sub-discipline of the field of health economics, which itself is a relatively new sub-discipline of economics, only formerly appearing in the

economics scientific literature since the 1960s. Pharmacoeconomics has been defined as “the description and analysis of

the costs of drug therapy to health care systems and society”. It identifies, measures and compare costs (resources consumed) and consequences (clinical, economic, humanistic) of pharmaceutical products and services [1].

Citizens and physicians worldwide are increasingly facing problems in deciding which treatment is most effective medically and economically. In order to survive and thrive in this recessionary world, pharma and healthcare businesses will have to rigorously analyze and interpret comparative effectiveness research (CER) results or in other words, perform pharmacoeconomic evaluations. Economics is all about limited “resources” and unlimited “wants”. Pharmacoeconomics and health economics is a logical and explicit framework to aid health care workers. The per capita income of all middle class people is limited and the drug prices are growing extensively. Hence to satisfy the health care needs of majority of the people, knowledge of pharmacoeconomics is essential to all health care professionals and postgraduates. Pharmacoeconomics is an economics discipline that evaluates the behaviour of individuals, firms and markets relevant to the use of pharmaceutical products, services and programmes. It focuses on the costs (inputs) and consequences (outcomes) of such a use. It applies the theories and tools of economics, including Managerial Economics, to the science and business of pharmaceuticals. The purpose of Pharmacoeconomics is to establish the relative worth of a product/service that can be used by decision makers who face limited budgets [2, 3, 4, 5, 6].

Pharmacoeconomics is needful in pharmaceutical industry, government, and in the private sector for comparing various cost consequences. The two fundamental

components of pharmacoeconomic studies are measures of costs and measures of outcomes that are combined into a quantitative measure or ratio [7].

Medical profession should know how to measure the cost of interventions and how to measure their benefits. Clinicians often face decisions about cost and efficiency of medicine and technologies that aggregate impact on the health system [8].

Doctors are the main actors involved in the structure and performance of the health care system of a country, since they are major part of the team that required achieving the goals of the plan’s health [9].

The pharmaceutical industry traditionally viewed communications to the clinicians as one of its most powerful marketing tools and tended to concentrate on the safety and efficacy of medicines. However, the paradigm is now changing, as some pharmaceutical manufacturers are including economic (“pharmacoeconomic”) data in their communications [10].

Most developing countries lack policies that encourage the use of economic evaluations in medicine selection for public funding, prioritization of aid or health insurance. In addition, relevant guidelines for reporting pharmacoeconomic analyses are not available in the majority of countries. Most developing countries and low income countries do have National Essential Medicine Lists to guide procurement and donation of medicines in the public sector which is the case in Bosnia and Herzegovina [11].

In order to ensure financial sustainability of health care system but also to ensure access to novel therapies formal pharmacoeconomic evidence can potentially

inform coverage and reimbursement decisions of various health interventions and technologies, as well as the development of formularies and clinical practice guidelines. This is especially important in lower income countries that face more serious constraints on the allocation of their scarce healthcare resources.

Given the importance of pharmacoconomics and rise in recent decades, Medical postgraduate students and Healthcare professionals should have basic knowledge about it and actively implement in diagnostic decision making, therapeutic interventions, the prevention programs, epidemiology and research. The objective of this study was to assess the knowledge and perceptions about Pharmacoconomics among medical postgraduates and healthcare professionals in tertiary care teaching hospital in Udaipur.

## **Materials and Methods**

A cross sectional study was conducted in Geetanjali University specialized hospital which is located in southern region of the Rajasthan, in the month of July 2014. The main objective of the study was to assess the extent of knowledge and awareness of pharmacoconomics and its methods of application among doctors who are doing postgraduation in various departments of our college and healthcare professionals.

I and Dr. Karunakar Kota, Research scholar, Department of Pharmacology, GMCH, took the initiative in this regard. We conducted pharmaco-economic evaluation for the first time among postgraduates and healthcare professionals.

We prepared a questionnaire based explorative study design to track the objective of the study from different texts of

general economic health. The detailed questionnaire is enclosed in appendix 1. Self administered questionnaire was used to collect the data from respondents who were willing to participate in the study on the date of visit to the medical college.

The first part of the questionnaire contains respondent's general information (age, sex, department and year of experience as postgraduate/ healthcare professional). The second part of questionnaire contains multiple choice formats with focus from knowledge and perceptions of Pharmacoconomics, methods of application, etc.

The main way of collecting this information is – either through oral interviews (face to face or telephone), or by self administered questionnaires, or by using some combination of these two methods [12, 13, 14]. The respondents were asked to select one option which is most appropriate to relevant question according to them. The response was reviewed and analysis was done.

In this study, we followed standard pattern to measure the level of awareness, knowledge and methods of application of postgraduate students and healthcare professionals on the general topic of pharmacoconomics. The purpose of the study was explained before the interview to all participants and oral consent obtained before the interview.

All the survey questions related to basic definitions on concepts of pharmacoconomics were assigned equal value, i.e 1 for correct response and 0 otherwise. For calculating the overall rating scale the total number of correct response was divided by the total number of questions and multiplied by 100. The results were

expressed as percentage response in each of three categories from the total as 100%.

## **Results**

We have prepared around 200 copies of pharmacoeconomics questionnaire and distributed it among postgraduates and healthcare professionals of all the departments of our college. We have given those necessary instructions and sufficient time to fill the questionnaire. At the end we have received only 79 filled copies of questionnaire out of which 73 copies duly filled were considered for further statistical analysis and the results is presented below in the tabular form (Table: 1, 2 & 3).

The results of our feedback revealed the following facts. The medical students are coming through the science stream and have limited awareness about concept of economics. Today's medical students are becoming tomorrow's policy makers or evaluators of health sector, so their knowledge in the field of economics must be strengthened and they must be familiarize with the concept of rational choice, decision analysis and economic evaluation techniques.

One respondent said "we are indirectly practicing pharmacoeconomics, most of the time when we are making prescriptions looking for the affordability of the patient. But we never had gone through any training on pharmacoeconomic evaluation techniques".

A resident responded like this "yes it is really interesting to study and practice pharmacoeconomics especially in our country settings. Doctors must be familiar with cost effective interventions which will reduce burden to patients and will avoid unnecessary prescriptions and

investigations". Doctors who had experience on administrative field also said the same word, they never exposed to any training on pharmacoeconomics but got training on management subjects like human resources and financing when they holding administrative positions. They expressed their interest on pharmacoeconomics and argued that medical curriculum should be revised on need base and new concepts should be included.

One senior specialist responded like this "we are getting some information regarding cost effective therapies, quality adjusted life years etc through medical journals only. But without a basic knowledge on these kind of techniques, very difficult to apply."

## **Discussion**

This evaluation of pharmacoeconomics is important because we have to know the pulse of the postgraduate students and healthcare professionals, their interest and their opinion of methods of application in pharmacoeconomics and their perception regarding pharmacoeconomics. This type of cross sectional study represents the primary means used by most programs to assess the pharmacoeconomics.

The willingness to participate in the study among postgraduates and healthcare professionals, postgraduates was extremely poor. Those who have participated almost, 39% of PG's and 59% of HCP's were having awareness about the Pharmacoeconomics. Nearly 34% of PG's and 50% of the HCP were having knowledge regarding pharmacoeconomics and around 6.5% and 31% of participants have learnt the method of application in various aspects by themselves of their own practice.

**Table.1** Percentage response of participants to Feedback Questions in each category

Q.No	<u>Awareness</u> Questions	Response (%)			
		Postgraduates (n=31) (100%)		Healthcare Professionals (n=42) (100%)	
		Right answer	Wrong answer	Right answer	Wrong answer
1	Are you aware of the term “Pharmacoeconomics”?	39%	61%	55%	45%
2	Have you heard about Pharmacoeconomic evaluation techniques in healthcare system?	10%	90%	19%	81%
3	Is every teaching hospital in India are following Pharmacoeconomic guidelines?	71%	29%	83%	17%
4	Is Health economics and Pharmacoeconomics are same?	81%	19%	97.6%	2.4%
5	What is Pharmacoeconomics?	13%	87%	17%	83 %
6	ECH outcomes in Pharmacoeconomics evaluate	6.4%	93.6%	9.5%	90.5%

**Table.2**

Q.No	<u>Knowledge</u> Questions	Response (%)			
		Postgraduates (n=31) (100%)		Healthcare Professionals (n=42) (100%)	
		Right answer	Wrong answer	Right answer	Wrong answer
1	Have you gone under any training/ workshop on Pharmacoeconomics	0 % **	100%	0 % **	100%
2	All are different types of Pharmacoeconomic analysis EXCEPT	55%	45%	69%	31%
3	Following are different types of cost involved in Pharmacoeconomic analysis EXCEPT	13%	87%	31%	69%
4	Pain and suffering of patients are included in-----cost	34%	56%	50%	50%
5	Robustness of results are best tested by----- ---analysis	10%	90%	36%	64%
6	Pharmacoeconomic governing body in India is	16%	84%	40.48%	59.52%

**Table.3**

Q.No	<u>Methods of application</u> Questions	Response (%)			
		Postgraduates (n=31) (100%)		Healthcare Professionals (n=42) (100%)	
		Right answer	Wrong answer	Right answer	Wrong answer
1	Are you applying Pharmacoeconomics in your clinical practice	6.5%	93.5%	31%	69%
2	Most commonly used Pharmacoeconomic analysis is	32%	68%	43%	57%
3	To compare the costs of different brands as well as brand and generic products which Pharmacoeconomic analysis is preferred	29%	71%	45%	55%
4	Pharmacoeconomic analysis which measures outcome in monetary units is-----	35.5%	64.5%	45%	55%
5	Quality Adjusted Life Years (QALY) measured in-----analysis	29%	71%	38%	62%
6	To compare the costs of National Highway project and vaccination programme which Pharmacoeconomic analysis is preferred?	26%	74%	43%	57%
7	Give your opinion about the inclusion of Pharmacoeconomics in Medical Under Graduate curriculum	64.5%	35.5%	31%	69%
8	Is Medical curriculum should be updated based on new approaches to Pharmacoeconomics and be need based	51.6%	48.4%	26%	74%
9	Pharmacoeconomics is applicable in India and will improve current health system performance	93.6% **	6.4%	95% **	5%

However 93.6% and 95% of respondents believe that application of pharmacoeconomic techniques will improve the performance of health care delivery system of India.

We selected postgraduates as they are specialized doctors in their selected field and healthcare professionals are main actors involved in the structure and performance of healthcare system in the country. They are the major part of health team to achieve the goal of plan of healthcare system.

In our study the willingness of postgraduates to participate in feed back questionnaire were extremely poor as compare to healthcare professionals. Because, a) lack of interest in pharmacoeconomics , b) unawareness about significance of pharmacoeconomics , c) lack of exposure to pharmacoeconomics concept in MBBS curriculum.

Kulkarani conducted research in form of pilot project among medical students and concluded that there is a need for medical undergraduate students to be sensitized on

basic concept of pharmacoeconomics [15]. Hence it is advisable to include PE concepts and practical exercises in the curriculum of medical undergraduates what would help them to realize the enormous differences in cost of various brands available in the market and will also increase the awareness of indirect cost and intangible cost associated with the drug therapy. Secondly to increase the awareness it is desirable to conduct CMEs, work shops and symposiums in medical colleges and also by conducting national as well as inter national conferences on Pharmacoeconomics which will help PG's as well as HCP's to create more awareness, refresh and update their knowledge.

In this research we found interesting that most of the students and HCP's surveyed state that they are familiar with term "pharmacoeconomics" and they make a difference versus "health economics". It is also interested that most of them, even listened or passed exam, do not feel comfortable in conducting and understanding basic pharmacoeconomic methods and analysis. This could be a good signal for future deeper research on structure and time allocation to this topic. Future research has to be carried out on large scale involving private practitioners practicing in their clinics, polyclinics, nursing homes and corporate hospitals and practitioners of government hospitals at primary, secondary and tertiary care levels which will give more valid results on the level of knowledge of doctors on pharmacoeconomics and health economics.

### **Conclusion**

The conclusion of this study has revealed that the knowledge and perception levels of medical postgraduates and healthcare professionals in day to day use of pharmacoeconomics concepts were poor and

limited. Providing them with basic knowledge at various levels of their medical education and training will go a long way in improving their basic knowledge in health economics concepts. Increasing the awareness among medical professional on the economic evaluation approach will improve their usage in their decision making.

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