

A case study to know the level of awareness about pharmacogenomics and its clinical application among doctors of Lucknow, Uttar Pradesh, India

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ABSTRACT

Background: Presently knowledge of pharmacogenomics is important for therapeutic purposes as well as for the prevention of many ADRs (adverse drug reactions). So this study was planned to know the level of awareness about pharmacogenomics and its clinical application among doctors of Lucknow, Uttar Pradesh, India.

Methods: The study was done through a survey among 400 doctors by a questionnaire method. The questions were formulated to know the awareness and extent of knowledge of doctor. The answers were in yes and no and the data collected was calculated in percentage.

Results: 79.75% doctors were well aware about pharmacogenomics. 13.0% doctors were not aware but wanted to know about it, while 7.25% of doctors were neither aware nor interested about pharmacogenomics.

Conclusions: Most of the doctors were aware about the pharmacogenomics theoretically and they need to be updated about its clinical application in their practice by seminars, presentation and workshops.

Keywords: pharmacogenomics, Doctors, Awareness, Personalized medicine.

INTRODUCTION

Pharmacogenomics and pharmacogenetics are the two important words used commonly and interchangeably nowadays. Pharmacogenetics is dealing with the study of genetic makeup, SNPs (single nucleotide polymorphisms) and finding out their role in drug response. In pharmacogenomics the knowledge acquired by the pharmacogenetics is used for clinical application by giving suitable drug according to the genetic makeup as all the pharmacokinetic parameters like absorption, distribution, metabolism and excretion are dependent on it.^{1,2}

Genetic polymorphism in the drug metabolizing enzymes such as cytochrome P450s (CYP450s) have been shown

to influence the fate and rate of drug metabolism.³ Pharmacogenomics helps in choosing right medicine for right person to avoid ADRs (adverse drug reactions) as well as treatment failure. This is an approach towards the personalized medicine, in which drugs and drug combinations are optimized for each individual's unique genetic makeup.^{1,4}

On the basis of available literature, we can see variations in the drug response among individuals, which can lead difference in the efficacy of treatment as well as adverse drug reactions.⁵

Presently pharmacogenetics testing is available only to a small number of patients, but it will influence clinical practice to a larger extent in the near future.⁶

METHODS

The study was done through a survey among 400 doctors by a questionnaire method. The questions were formulated to know the awareness and extent of knowledge of doctor about pharmacogenomics. The answers were in yes and no and the data collected was calculated in percentage.

Table 1: Grading according to marks.

Marks	Inference
>8	Well aware about pharmacogenomics and its clinical application
6-8	Well aware about pharmacogenomics but not its clinical application
3-5	Not aware about pharmacogenomics but willing to know
<3	Not aware about pharmacogenomics

Statistical analysis

All data were entered in MS excel for statistical analyses and data was summarized as percentage.

RESULTS

A total number of 400 doctors were given a questionnaire about pharmacogenomics. Among them, 314 were physicians and 86 were surgeons. In terms of educational qualification 207 were medical graduates, 152 were post graduates and 41 were super specialists (Table 2).

Table 2: Doctors and their qualifications.

	Graduates	Post graduates	Super specialists	Total
Physicians	207	89	18	314
Surgeons	0	63	23	86
Total	207	152	41	400

Table 3: Extent of awareness among doctors.

Extent of awareness	
Doctors aware about pharmacogenomics as well as its clinical application	35.25%
Doctors aware about pharmacogenomics but not its clinical application	44.5%
Doctors not aware about pharmacogenomics but willing to know	13.0%
Doctors having no interest in pharmacogenomics	7.25%

In our study, 79.75% (319) of the doctors were aware about pharmacogenomics and even 35.25% (141) doctors were well versed with its clinical application. 20.25% (81) doctors were not aware about pharmacogenomics but 13% (52) showed interest to know more about it.

7.25% (29) doctors were not at all interested in pharmacogenomics (Table 3).

DISCUSSION

Many doctors showed interest in new emerging possibilities like personalized medicine and pharmacogenomics. An earlier study on faculty members about their knowledge of pharmacogenetics, found them as 6.3% excellent, 9.4% very good, 28.1% good, 37.5% fair and 18.8% as poor, while in our study, 79.75% of the doctors were aware and only 7.25% doctors showed no interest in pharmacogenomics.⁷

There are lots of knowledge barriers due to which health professionals are not confident in using pharmacogenomics as a tool for their drug therapy decision-making even though they are well aware theoretically about it.^{8,9,10} Keeping in mind the interest of healthcare professionals towards new emerging field of pharmacogenomics, more presentation and seminars should be held to spread awareness and simultaneously practical workshops can give confidence to apply this science in their routine practice.

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