



## Socio-Demographic Characteristics and Drug Related Problems of Patients Presenting to the Emergency Department: General Linear Model and Factorial Analysis

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### ABSTRACT

**Objectives:** The paper discusses exploratory correlational analysis and general linear model which provides an summary of the connection between the drug related problems occurring during the course of study with socio-demographic profile of the patients admitted in emergency department. **Study design:** Prospective observational study. **Methods:** The study was conducted in the emergency department of two different hospitals located in Punjab for a period of 6 months. A total of 260 patients were included for analysis as per inclusion and exclusion criteria. **Results:** it had been revealed that 61.9% (161) patients were found male whereas 38.1% (99) patients were female. The value of kolmogorov-smirnov (ks) ( $p=0.12$ ), shapiro-wilk (sw) ( $p=0.065$ ) which confirms that standard distribution. the value of  $r^2$  for the dependent variable that is age, weight and height was found to be  $r^2 = 0.150a$ ,  $0.559b$ ,  $0.015c$  respectively in linear regression model.

The results shows that there was significant effect of experimental variable like number of drug per prescription and medicines from essential drug list with variable like disease state e.g. type of the disease in emergency department and emergency type also as errors associated with drug related problems. Drug utilization study, as described by the WHO, is a structured process which is used to assess the quality of drug therapy by engaging in the evaluation of data on drug prescribing, dispensing and patient use during a given health care environment, against predetermined, prescribed criteria and standards, with special emphasis on the resulting medical, communal, and financial consequences. Proper drug evaluation study features a great emphasis to global minimization in morbidity and mortality with its associated medical, communal and financial benefits [2]. It is more prevalent in developing countries where health allowance is less and 30-40% of the total health allowance is spent on medicines. World Health Organization (WHO) has formulated a group of core drug use indicators, which measure the performance

of prescribers, patients experience at health facilities and whether the health personnel can function effectively. The assessment of drug use indicators consistent with WHO guidelines on the way to investigate drug use in health facilities are prescribing indicators, patient care indicators, facility indicators and complementary indicators. Emergency medicine is that the specialty that cares for the care seeker, at the foremost vulnerable moments of their life. It faces the challenge of evaluating the early phases of the biological behaviour in diseases. Urgency, unpredictability and therefore the got to acquire skills of the whole spectrum aged, gender and therefore the pathology are the hallmark of the specialty. Patients come to the emergency department (ED) for evaluation of emergent or urgent conditions for after-h medical aid, or by referral from their primary physician. In the ED, physicians face crucial and sever cases that require to be treated quickly with top quality. This prospective observational study was conducted in the emergency department of three different multispecialty hospitals in Punjab for period of 6 months after getting approval from Institutional Ethical Committee. Each individual signed a consent form that outlined the aims and methodology of the study. The confidence interval of the study was selected as 95% with cut off interval ( $p=0.05$ ) as significant level. A sample size was calculated through software called Epiinfo (Stat Cal). The total number of patients enrolled in the study was 320 as per sample size. A total of 260 patients were included for analysis as per inclusion and exclusion criteria. **Inclusion criteria:** All patients irrespective of age, diagnosis admitted in emergency department were included in the study. **Exclusion criteria:** Patients who were critical in clinician's opinion were excluded from the study. The patients enrolled for the evaluation was grouped based on their age group and category of disease. The study was analysed by SPSS version 16. Descriptive and analytical analysis was used to describe the results. A descriptive study was conducted to describe basic features of data in the study and to provide simple summaries about the sample and the measures. Descriptive analysis includes mean, standard deviation (for normally distributed data) whereas median and interquartile range (for not

normally distributed data). An analytical study was conducted to find out the effect of independent variable on the dependent variable. A general linear model and factorial analysis was conducted to seek out the connection and correlation also on predict the methods for further analysis on sizable amount of populations

From this study, we concluded that general linear model shows strong correlation between sorts of disease and sort of emergency with number of medicine prescribed per prescription and number of drugs prescribed from essential drug list that is drugs prescribed is dependent upon disease condition that is if there are comorbidities then the drug per prescription may vary. More the severity of the disease, more drugs are going to be prescribed to the patient for early recovery. Even we can conclude that comorbidities even lead to polypharmacy and thereby also increasing chances of DRPs (drug related problems). The facilities available in the hospitals which are given by healthcare providers were the factors that had the greatest impact on overall satisfaction of the patient's in emergency department. Multiple factor is found directly correlated with the socio-demographic factor of the patients in an emergency department. During the study it was found that the burden of multimorbidity is the strongest clinical predictor of ED attendance. Another factor that contributes more is patient drug compliance, drug choice problem, drug interactions and other drug related problems. The GLM explains about the relationship of number of drug per prescription and number of drugs from essential drug list is directly correlating with the type of disease and type of emergency which were found highly significant. The data of this study can be useful for preparing National Health Policies towards emergency care as well as for clinical guideline development.

Keywords: Drug related problems; General linear model; Factorial analysis