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ASSESSING PAEDIATRIC DRUG UTILIZATION PATTERN

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ABSTRACT

The World Health Organisation defines drug utilization evaluation as the study of the social, medical, and economic effects of pharmaceutical marketing, distribution, prescription, and use in society. Our study's objective is to examine the drug use patterns of a pediatric patient population in a hospital using the World Health Organization prescription indicators. Drug usage studies are one possible instrument for assessing the quality of the healthcare system. Drug Utilization Studies are therefore carried out to encourage drug usage in communities reasonably. This paper's primary goal is to enlighten readers about the sensible use of medication in outpatient and inpatient departments, with a focus on drug utilization evaluation. Additionally, it raises awareness among academicians, researchers, chemists, nurses, and healthcare professionals about how to lessen the irrationality of pharmaceuticals. The method used to compile this review information is gathered from websites, Google Scholar, PubMed, Research Gate, Wiley Online Library, and Elsevier.

Keywords: Drug utilization**,** Polypharmacy, Anti-microbial, Prescriptions.

INTRODUCTION

The World Health Organization (WHO) defines drug utilization as "the study of various aspects of medicinal product marketing, distribution, prescription, and societal use," with an emphasis on the ensuing medical and socioeconomic effects (WHO, 2003).[1] This definition is what the research explores. It recognizes drug use as an essential part of the health care system and helps to better understand, interpret, and enhance drug prescription, administration, and usage.

The main goals of the study are assessing prescribing patterns, utilizing WHO core indicators, and determining whether prescribed medications are appropriate in a pediatric hospital setting.[2] With a focus on pediatrics—the medical treatment of newborns, kids, and teenagers—the study aims to identify areas that require intervention to encourage pediatric outpatients to use medications wisely.[3], [4], [5] Furthermore, by employing WHO-recommended indicators, it seeks to examine how doctors prescribe in pediatric outpatient centers.[2], [6]

Additionally, the study emphasizes the overall goal of encouraging responsible drug use by highlighting the need for drugs to be prescribed for particular therapeutic purposes, be safe, and have the right dosages, forms, and regimens. It also highlights how crucial it is that medications be affordable and easily accessible. Notably, recent reports highlight difficulties with pediatric drug therapy, especially problems like improper drug selection, dosage, and regimens.[5]

There is a noticeable disparity in children's participation in clinical trials due to ethical concerns and a lack of data regarding medication effects in pediatric populations. Thus, there is an urgent need for studies assessing doctors' prescription drug prescribing practices for infants and children.[7]

Drug Utilization Reviews (DURs) are acknowledged in the study as a useful method for detecting unjustified or improper drug use and encouraging prudent drug therapy. It highlights the significance of fixed-dose combinations (FDCs) in improving patient compliance and effectiveness for treatment and the requirement for continuing the utilization of drug studies for evaluating responsible and appropriate drug therapy.[6], [8]

Furthermore, the study emphasizes how the use of drugs has increased significantly, and this has resulted in a rise in problems related to drugs. This is especially noticeable in intensive care unit (ICU) settings. It draws attention to how common polypharmacy is—the simultaneous use of several medications—and how it negatively affects older people's health. To ensure responsible drug use, especially for seniors, an examination of pharmaceutical use is necessary, as polypharmacy is linked to increased drug burden, interactions between drugs, and negative effects.[9][10][11]

To comprehend medication usage patterns and encourage responsible drug use, the study concludes that research on the use of drugs is crucial. It highlights the significance of looking at drug prescription trends, especially in pediatric outpatient clinics, to find and responsibly address problems associated with medication use. It also emphasizes the necessity of continuing Drug Utilization Reviews (DURs) to encourage responsible drug use and enhance health outcomes.[12]

METHODOLOGY

This research utilized a retrospective observational strategy for its study. The study, which concentrated on an intensive care unit (ICU) of medicine, was carried out at the Shri. Chatrapati Shivaji Maharaj Sarvopchar Rugnalaya in Solapur.150 patients' records of cases from their admissions to the medical ICU between June 1, 2017, and May 31, 2018, were included in the study. Information on clinical and demographic characteristics, duration of hospital stays, prescriptions, and use of drugs was obtained from patients' case files. In the individual's cases, information has been obtained on the cost, sensitive pattern, dose, and amount of medication prescribed. The gathered data was summarized using statistical methods. The necessary parameters have been determined to obtain frequency distributions, means, and standard deviations. Patient confidentiality and anonymity were guaranteed by following ethical criteria in this investigation. The institutional review board (IRB) of Shri. Chatrapati Shivaji Maharaj Sarvopchar Rugnalaya granted approval.[9]

A retrospective observational methodology was used for this investigation.

A sizable general hospital providing tertiary care serves as the study's location.

The analysis includes electronic health records from patients with anxiety disorders who were prescribed BZDRAs between 2018 and 2021. 7195 prescriptions for 694 patients were written during this time, according to the dataset. Prescription details, concurrent use of several BZDRAs, concurrent use of Z-drugs and benzodiazepines (BZDs), and related medical problems are the main topics of data extraction from electronic health records. Prescription dates, BZDRA types and dosages, patient demographics, and other diseases are all pertinent variables. Prescription features, the frequency of concurrent BZDRA use, and related medical problems are summarized using descriptive statistics. For pertinent variables, calculations are made of frequencies, means, and percentages. Inferential statistics can also be applied to some analyses based on the specific research questions. The study complies with ethical standards, protecting patient privacy and confidentiality. The institutional review board (IRB) of the tertiary care general hospital grants approval.[13]

A cross-sectional observation design is employed in the present research.

A primary medical facility within Malaysia acts as the study's location.

This investigation involves individuals over 65 who have been identified as having non-communicable diseases. The population of eligible patients during the study period is the basis for determining the sample size. After getting informed consent from eligible people, information is gathered. Patient demographics, prescription volume, non-communicable illness diagnosis, comorbidities, and specifics of prescribed drugs are among the data collected. Medication and health information for patients are the sources of the data.

The information collected has been analyzed using statistical methods. Relevant characteristics, including age, number of prescriptions, comorbidity prevalence, and types of prescribed drugs, are determined together with their mean, standard deviation, frequencies, and percentages. When appropriate, chi-square tests or t-tests can be used to evaluate relationships or differences between variables. A signed informed consent is sought from each patient who participates in the study, and ethical considerations are followed. It receives approval from the academic review board and the appropriate ethical committee.[14]

A population-based retrospective analysis is employed in the present research.

The study utilizes data from local pharmacy prescription databases and the Registry of Rare Diseases of Tuscany. Patients with uncommon diseases who lived in Tuscany, Italy, between 2008 and 2018 make up the study population. The sample is taken from a combined dataset that was gathered from the Register of Unusual Disease and drugstore prescription databases. Regional registries are used for collecting details on drugs that are prescribed, while the Registry of Rare Diseases of Tuscany is the source of data on the diagnosis of uncommon diseases. Interest factors include patient demographics, rare disease types, prescription drug types, medicine therapeutic categories, and patterns of use. To provide an overview of the information collected,

statistical indicators are utilized. Medication severity by therapeutic class and the prevalence of taking medications are computed. Appropriate statistical techniques, like chi-square tests or t-tests, are used to investigate gender variations in medicine consumption trends. The study complies with ethical standards, protecting patient privacy and confidentiality. It receives approval from the institution's review board and the appropriate ethical committee.[15]

NKP Salve Institute Osteoarthritis Patients:

The NKP Salve Institute of Medical Sciences and Research Centre, Nagpur, a tertiary care hospital, served as the study's location.

The observational study ran from July 2022 to December 2022, or sixty days.

108 individuals with osteoarthritis took part in the research. Patient case files, medication lists, survey responses, and test findings were the sources of information. Age, gender, weight, lab results, past medical history, social habits, OA history, and comorbid conditions were all recorded. The data obtained was analyzed using statistical methods. Both Word and Excel for PC have been employed to make graphs and tables. The administrative databases of particular health departments in Italy were used for the study.

2017-2019-2020-2019-2020 were included in the retrospective study.

Psoriatic patients who have been identified by hospitalization notes, exemption codes, or prescriptions for topical anti-psoriatic drugs were included.

Administration sources have been utilized for gathering information regarding baseline features as well as therapy patterns.

Emphasis on b/tsDMARDs A subgroup of bio-naïve patients who were enrolled between 2015 and 2018 had their use of biological and targeted synthetic disease-modifying antirheumatic medications evaluated. We looked at persistence, monthly dosage, and typical intervals between prescriptions.

Specific analyses concerning the use of b/tsDMARDs have been carried out, in addition to statistical analysis. The confidentiality and privacy of the patients were protected by following the rules of ethics in both investigations. Permission was acquired from pertinent institutions of higher learning or ethical committees. [16], [17][18]

A retrospective observational methodology is used in this investigation.

The setting of the study: information is gathered from hospital stays at 17 Brazilian hotels. The research encompasses the time frame from January 1, 2018, to September 14, 2020. All ICU admissions made within the designated time frame are included in the study. Data collection involves gathering details on medical characteristics, COVID-19 status, and (as established using DOT or Dd) for each patient admitted to the ICU. Prescription logs, digital medical histories, and medical information were some examples of source data. Antibiotic consumption is measured through the computation of DOT and DDD. Trends in antibiotic usage are summed up using descriptive statistics. Comparison of Patients with and Without COVID-19:

The intake of antibiotics and clinical traits of patients with and without COVID-19 are compared. A variety of statistical tests, such as chi-square and t-tests, are used to evaluate group differences. Antimicrobial Regimen Assessment in COVID-19 Patients: Antimicrobial regimens provided to COVID-19 patients are analyzed using process mining techniques. A treatment pathway's sequence of antibiotic prescriptions and their adherence to recommendations or protocols can be visualized and analyzed with the help of the process mining approach. Patient confidentiality and privacy are protected by the study's adherence to ethical standards. The collaborating hospitals' ethical committees provide approval.[19], [20], [21]

A study with a cohort design is implemented in this investigation.

Information is gathered from seven European databases that are spread throughout the countries of Germany, Denmark, Italy, the Netherlands, Spain, and the UK.

January 1, 2018, to January 31, 2022, is the study period.

Adults 18 years of age and older who are first-time consumers of osteoporosis drugs during the investigation term and who have been documented in relevant systems for a minimum of twelve months are included in the study. Relevant European databases are used to gather information on the use of medications, such as teriparatide, denosumab, bisphosphonates, and SERMs. Data about the patient's demographics, prescribed medications, and length of therapy are taken out. Based on relevant variables, new user groups for osteosubstances are discovered and stated. The consumption patterns of bisphosphonates, teriparatides, denosumab, and SERMs throughout the participating European countries are compiled using descriptive statistics. To evaluate variations in the rates of drug use, comparisons are carried out. Cohort studies are used to assess the features of individuals who started using osteoporosis drugs during the study period. The study

complies with ethical standards, protecting patient privacy and confidentiality. The boards of inquiry or appropriate ethical panels in each of the participating nations grant their approval.[22], [23], [24]

This research employs a cohort design to examine the utilization trends of osteoporosis drugs in populations located across Europe. Study Population: Adults who are new to using osteoporosis substances and are no less than eighteen years old are included in the study. Participants must have been enrolled for a minimum of a year in any of these databases, which include Denmark, Germany, Italy, Spain, the Netherlands, and the UK. Information Gathering: Information is gathered from seven European databases between January 1, 2018, and January 31, 2022. These databases contain information about the use of medications, including when to start, stop, and continue taking them. Qualifications for inclusion: adults who have reached the age of 18. new patients are taking osteoporosis drugs. Registered for a minimum of a year in the relevant national databases. Criteria for Exclusion: those who don't have complete or absent medication records. people who have previously used osteoporosis medication during the last 12 months. Measures of Outcome: The frequency with which teriparatide, denosumab, bisphosphonates, and SERMs are started, continued, and stopped in the study population are the main end measures. Demographic traits, comorbidities, and patterns of medical care consumption are examples of secondary outcomes. Statistical Analysis: The medical and demographic features of the research population are going to be summed up using descriptive statistics. A comparison of osteoporosis medication usage habits among European nations is going to be done through the application of suitable statistical procedures, including logistic regression analysis and chi-square tests. Ethical Considerations: By using de-identified secondary data through national databases, the study preserves volunteer privacy and confidentiality. The relevant institution or organization provided ethical approval.[25], [26], [27]

To evaluate pediatric patients' use of drugs, the research used a cross-sectional design. Cross-sectional studies are appropriate for examining prevalence and correlations within a population because they offer an overview of people at a specific juncture in time. The investigation was carried out in eastern India at an educational institution that offered superior medical services. The main site for collecting data was the outpatient clinic of the hospital. To choose pediatric patients who visited the OPD during the study period, a convenient sample was used in the research. The collection of prescriptions took place every Thursday from 10 a.m. to 1 p.m. To guarantee a representative sample of patients attending the hospital during regular OPD hours, this time window was selected. Pediatric patients' informed consent was obtained from their guardians or parents before prescriptions were taken from them. Prescriptions were methodically collected on Thursdays within the allotted time range to preserve data collection uniformity. Every prescription was thoroughly examined to gather pertinent data on medication use, such as medication names, dosages, frequency, and indications. Prescription data was gathered and put into a database for examination. Pediatric patients' consumption habits have been collected using descriptive statistics, such as indicators of central tendency and probability distributions. For data analysis, statistical software programs like R or SPSS were utilized. Prior ethical approval was obtained from the institutional review board (IRB) of the teaching hospital before initiating data collection. Guardians or parents of the pediatric patients enrolled in the trial provided informed consent. Patient confidentiality was strictly maintained throughout the research process, and all data were anonymized to ensure privacy.[6]

A descriptive observational approach was employed in the study to examine the drug utilization trends of pediatric patients. Descriptive observational studies are appropriate for examining current drug prescribing practices since they concentrate on characterizing a population's or phenomenon's features without changing them. Various factors about patient demographics, illness conditions, prescribing habits, and economic concerns were recorded during the data-gathering process. The following information was gathered: Patient information: including date of OPD visit, sex, and age.
Disease condition(s): noted to ascertain which medical disorders are more common among children.
Age-based disease trend: To spot any trends or patterns in the prevalence of diseases among various age groups. presenting patient grievances: recommended should be aware of the main justifications for obtaining medical care. Disease diagnosis of the patient: recorded to identify the particular medical disorders that medical professionals have identified.
Drug classification system: designed to examine the many kinds of medications that are prescribed.
Drug administration routes: documented to help with understanding patient drug administration. Each drug's formulation is recorded to pinpoint the precise drug compositions that are recommended.

Price comparison: done to assess how economical fixed-dose medication combinations are about their components. Utilization trends for drugs were assessed using data analysis using WHO prescribing indicators. Metrics like the average number of prescriptions written, the proportion of prescriptions written under a generic name, and the proportion of prescription contacts with antibiotics are among the WHO prescribing indicators. The metrics in question were calculated using statistical analysis software like SPSS or R . Before starting to gather information, the educational hospital's institutional review board (IRB) granted authorization for ethics. During the trial, patient confidentiality was rigorously upheld, and all data were anonymized to safeguard patient privacy.[25], [26], [27]

The study used an observational concurrent design, in which individuals are observed and data are gathered concurrently with their therapy. This design facilitates the evaluation of existing procedures and results without obstructing the therapeutic process.75 children with proven typhoid fever, as determined by serological or cultural testing, were included in the study. Five private children's hospitals in the Surat region were used to find participants. A data collection form was used to obtain complete participant information. The following information was noted: Age, sex, and weight of the individuals are included in the demographic data.
Treatment history: recording the individuals' past medical interventions and prescription drugs.
Symptom presentation: It has been shown to comprehend the preliminary clinical manifestation of typhoid fever in children.
Lab results pertinent to the diagnosis and treatment of typhoid fever are included in the results of hematological and diagnostic tests.
Antibiotic usage patterns: This includes the kind, dosage, frequency, mode of administration, and length of time that antibiotics are prescribed for.
Patient's reaction to the drugs; in particular, the period of heat has been taken as a measure of antibiotic resistance and therapeutic response. A summary of the research's patients' results of treatment, therapy patterns, and demographics was achieved by the use of descriptive statistics in data analysis. It's also possible that inferential statistics were employed to evaluate correlations between variables like antibiotic regimens and fever clearance times. For data analysis, statistical techniques like R or SPSS may be used. The applicable institutional review boards (IRBs) or ethics committees granted ethical permission before the start of data collection. The guardians or parents of the pediatric patients who were part of the trial gave their informed consent. Strict observance of patient confidentiality was observed, and all data were anonymized to safeguard privacy.[8]

Retrospective Observational Study Design Study Location: Thrissur's Daya Hospital Participants: Ninety-six pediatric patients—male and female—with epilepsy who are undergoing treatment at Daya Hospital. Gathering of Data: Including Requirements: Children getting treatment at Daya Hospital must possess a valid diagnosis of epilepsy. Patients who don't fit the inclusion criteria or whose medical records aren't full are excluded. Variables in Data: Patient characteristics (gender, age) medical history about epilepsy (seizures' kind, length, and past therapies) Additional pertinent clinical information (comorbidities, familial epilepsy history) Reviewing patient records from Daya Hospital's medical database in retrospect is the method used to collect data. Ethical considerations: The study complied with ethical standards, protecting patient privacy and confidentiality. Approved by the institutional review board[6]

Retrospective Exploratory Cross-Sectional Observation Survey Study Design Time Frame: Two SemestersParticipants: senior pharmacy students enrolled in a two-year clinical pharmacist and hospital rotations program. Gathering of Data: Case sheets clerked by senior pharmacy students during their posting are one of the inclusion criteria. Case sheets that don't fit the pre-established inclusion requirements are excluded. Procedure for Gathering Data: Obtaining Important Case Files: The hospital's and pharmacy clinic's posting of information produced 110 essential case documents in all. Data Entry: Case files were entered into pre-made data-gathering forms when they met specific criteria. Data Coding: To facilitate analysis, each dataset was coded into several categories. Ethical Considerations: The study made sure that patient privacy and data protection laws were followed. The institution gave its consent. Explain the data analysis techniques you utilized, such as quantitative descriptive statistics and qualitative theme analysis. Describe each way that data coding aided in the analysis process.[23]

Descriptive Cohort Research January 1, 2021–February 1, 2022 is the study period. Participants: US-based adult COVID-19 hospital patients during the designated research period. Sources of data: Hospital Charge Master: Information about hospital stays, including costs and protocols. Claims data that provides details on healthcare services and utilization is known as health verification claims. The study period's adult COVID-19 hospitalized patients met the inclusion criteria. Gathering of Data: Relevant information was taken from the hospital charge master and Health Verity claims, including prescription regimens started while the patient was hospitalized. Data regarding the first three lines of drug regimens started for all patients was gathered. Ethical Considerations: The study complied with ethical standards, guaranteeing confidentiality of information and confidentiality for patients. If necessary, institutional review board approval was acquired. Describe the techniques used to analyze data, including the distribution of frequencies and statistical analysis. Examine the patient population and distribution for the first three pharmaceutical regimen lines that were started while the patient was in the hospital.[28]

Retrospective Claims A database was used for the study design. Population1.Participants in the study: Individuals with a single diagnostic code for a persistent cough comprise. Population 2: Individuals who reported cough-related problems for over eight weeks and received various codes. Participants with a chronic cough who were determined to meet the specified diagnostic criteria were eligible to apply. Information Gathering: Three-time points have been determined for characteristics of patients, disorders that are related to coughing, and medication utilization patterns: Index Date: study enrollment date. Six Months Before Index: Paste the information before registration. Twelve-Month Index after Enrollment: Retrospective Data. Individuals in Population 2 who fit into the top three diagnostic cough codes were examined as subgroups. Data sources: healthcare and pharmaceutical claim data from a retrospective claim database. Ethical considerations such as patient confidentiality and data protection were guaranteed by the study's adherence to ethical norms. When required, detailed permission or institutional review board approval was acquired. Data Analysis: Describe the data analysis techniques that were employed, such as comparing analysis and statistical analysis between Populations 1 and 2. For Population 2, conduct a subgroup analysis using the three most prevalent diagnostic cough codes.[14], [29], [30]

A National Retrospective Cohort Study Time Frame for Study: 2015–2020Participants: people with a diagnosis of CD or UC. Patients who are not yet bio-naïve are beginning Infliximab, Adalimumab, Vedolizumab, Golimumab, or Ustekinumab medication. The Danish National Register is the information source. Individuals who are bio-naïve to biologic therapy at the onset of treatment are the inclusion criteria. verified diagnosis of CD or UC using national registries in Denmark. Gathering of Data: Data on the diagnosis, therapy beginning, and demographics were taken from national registries in Denmark. The assessment focused on the length of time between ending the initial treatment and transitioning to a different biological drug, as well as medication persistence and switching patterns. The risk ratios related to discontinuing the original treatment and switching to a new biological therapy were examined using Cox regression analysis. Potential confounding variables like age, gender, disease severity, and comorbidities were taken into account. Moral Aspects to Take into Account: Ethical standards and laws controlling registration and the use of information were followed in this investigation. Privacy of information or confidentiality of patients was guaranteed throughout the gathering and processing of the data.[12]

Prospective Observational Study; Six Months of Study Setting: Hospital of Tertiary Care Participants: 310 patients from various hospital departments. Patients of varying genders and ages. All patients getting medical attention at the hospital during the study period meet the inclusion criteria. Data Collection: A record of each participant's prescribing behaviors was kept by observation. Special consideration was paid to the variation in steroid treatment according to gender. Analytical The SPSS version 16 software was used to carry out a one-way ANOVA to analyze the use of prescriptions across different patient demographics and departments. Gender variation in steroid treatment has been assessed, and the observed diversity in treatment groups was illustrated using a two-way ANOVA. Ethical standards and laws about research with human participants were followed in this study. The study followed healthcare privacy protocols and obtained informed consent from the subjects.[14], [31], [32]

Retrospective Observational Study Design Time of Study: September 2018–March 2019Location: Orthopaedics Division Participants: Individuals with rheumatoid arthritis (RA) who received a diagnosis between 2013 and 2017.Patients who fit the study's defined inclusion and exclusion criteria. Patients with RA diagnoses between 2013 and 2017 fulfill the selection criteria. Exclusion Criteria: Individuals who do not fit the established parameters for RA diagnosis. Gathering of Data: We obtained the eligible patients' medical records and looked through them to find relevant information. Demographic characteristics, pharmacological therapy information (medication name, dose, route of administration), and details on associated infections and comorbid illnesses were among the data that were retrieved. The documentation of comorbid condition management measures was also done. Centre of tendency and dispersion measurements for constant variables and percentages and frequency measurements for categorical variables that are categorical were among the descriptive statistics that were employed to synthesize the data. Moral Aspects to Take into Account: The regulations and ethical norms about the use of patient medical records for research purposes were followed in this study. Security and privacy for patients were upheld during the whole investigation.[25], [26], [27]

Case sheets clerked by senior pharmacy students during posting were the inclusion criteria. Case sheets that don't fit the pre-established inclusion requirements are excluded. Obtaining Important Case Sheets: From the hospital's and the clinical pharmacy's posting tracks, 110 relevant case sheets were obtained. Case files were entered into pre-made data-gathering forms when they met these criteria. To facilitate analysis, each dataset was coded into several categories. The information gathered from the case sheets was summarized using descriptive statistics. Patient confidentiality and data protection were respected by the study's ethical guidelines. If necessary, institutional review board approval was acquired. [25], [26], [27]

Cross-sectional descriptive observational study Study Location: Jordan University Hospital's outpatient pediatric clinic Examine Time: Two children who visited pediatric outpatient clinics during the study's duration. Gathering of Data: Jordan University Hospital's outpatient pediatric patient clinics supplied prescriptions, which were gathered over two months. Information on the socioeconomic background of the study participants, as well as information on prescriptions for injectable medications, antibiotics, and drug core prescribing factors, was acquired. Criteria for Evaluation: The five WHO medication prescribing indicators, which include the following, were used to assess prescribing practices: Average amount of medicine used in each interaction percentage of contacts where a prescription antibiotic is given percentage of contacts where a prescription injection was given proportion of medications administered under a generic name percentage of prescription drug interactions with a list of important medications The data that was gathered, including frequencies and percentages, was summarised using descriptive statistics. Drug core prescription indicators from various pediatric outpatient clinics were compared. Moral Aspects to Take into Account: Ethical standards and laws about research with human participants were followed in this study. The confidentiality and privacy of patients were protected during the gathering and processing of data. [25], [30], [33]

RESULT AND DISCUSSION

The research involved a group of patients (identified as 150 ICU) who were approximately 45 years old on average, with an age range of 17 years. During their ICU stay, they were typically prescribed five to ten medications. The most commonly prescribed medication class was antimicrobials, followed by gastrointestinal treatments. A total of 174 branded and 1235 generic medications were prescribed, with a significant proportion being fixed drug combinations. The high prevalence of polypharmacy observed highlights the complexity of medical conditions and treatment regimens in critically ill patients. Further studies are necessary to investigate how medication prescribing patterns affect patient outcomes and healthcare resource utilization in ICU settings.[9]

This research examined how patients with anxiety disorders use BZRAs and how doctors prescribe them. The study found that many patients take multiple BZRAs at the same time and that patients with other health conditions are more likely to use more than one BZRA. Elderly patients who use multiple BZRAs are more likely to use them for a long time, and this raises concerns about the risks of long-term benzodiazepine use in older people. More research is needed to fully understand what these prescription patterns mean for patients' safety and health outcomes.[13]

The research conducted involved 295 elderly patients who were suffering from multiple health issues and were taking numerous medications simultaneously. An overwhelming majority of the patients, i.e., more than 97%, were prescribed multiple medications, with endocrine and cardiovascular drugs being the most frequently prescribed ones. The use of multiple medications by the elderly can significantly elevate the risk of falls and related injuries, emphasizing the importance of optimizing medication regimens by reducing the number of prescribed drugs. Interventions that involve deprescribing are crucial to reducing the chances of adverse drug reactions and improving patient outcomes. Further research is needed to evaluate the effectiveness of such interventions and to optimize medication management among the vulnerable elderly population.[34]

A recent study discovered that 85.4% of individuals suffering from rare diseases reported using medication, with the highest prevalence of use being in drugs for the digestive system, metabolism, and anti-infection. Additionally, the study revealed that male children displayed a greater prevalence of medication utilization, indicating that there may be gender-based variations in the use of medication among pediatric RD patients. These results highlight the various therapeutic requirements of RD patients, and understanding these patterns is vital for customizing therapeutic interventions and enhancing outcomes in these patients.[15]

385,273 individuals who had not previously used ranitidine were identified during the research period. The majority of these individuals were women aged between 18 to 74 years. After the issuance of safety alerts and regulatory actions, prescriptions for ranitidine significantly declined. This led to an increase in the number of patients switching to alternative medications, primarily proton pump inhibitors (PPIs). These findings underscore the importance of continuous monitoring to ensure optimal patient care and safety.[35]

Significant knee joint impairment was observed in 45% of patients with OA. The most commonly prescribed medications were NSAIDs, and 81% of patients received a combination of NSAIDs, calcium, and vitamin D3. However, only 52% of patients adhered to their prescribed therapy. The most prevalent therapy included a combination of NSAIDs, calcium, vitamin D3, glucosamine, and Chondroitin Sulphate. The study highlights the challenges of ensuring adherence to treatment in OA patients, despite the widespread prescription of medication regimens. Effective strategies are needed to alleviate pain and improve joint function. The medication patterns observed in the study indicate a preference for combination therapies that target inflammation, bone health, and cartilage preservation. To achieve optimal outcomes for OA management, further exploration of strategies to improve treatment adherence, such as patient education and tailored interventions, is necessary.[36]

The number of patients diagnosed with psoriasis has increased steadily over the past four years. The availability of various treatment options has not been fully utilized, with only 2% of patients receiving biological treatment. The utilization of biological therapies has shifted from TNF inhibitors to IL inhibitors among patients. The high persistence rates observed for both TNF and IL inhibitors support their continued use in psoriasis management.[17]

The study analyzed 12,319 patients who did not have COVID-19, 68,405 patients who were admitted before the pandemic, and 3,240 COVID-19 patients. The study concluded that COVID-19 patients who were admitted during the pandemic required advanced respiratory support more frequently as compared to non-COVID-19 patients. COVID-19 patients also used antimicrobials more often, had longer stays in the ICU, and had higher mortality rates in the ICU than non-COVID-19 patients. The primary treatment involved the use of penicillins along with ß-lactamase inhibitors, third-generation cephalosporins, and a combination of macrolides and penicillin.[19]

Research conducted on 12,319 patients not affected by COVID-19, 68,405 patients who were admitted before the pandemic, and 3240 COVID-19 patients revealed that COVID-19 patients required more advanced respiratory support, had escalated antimicrobial usage, longer ICU stays, and higher mortality rates in comparison to non-COVID-19 patients. The study sheds light on the difficulties faced by healthcare providers when treating COVID-19 patients. It emphasizes the importance of empiric antimicrobial therapy and the use of broad-spectrum antibiotics.[19]

Fixed Dose Combinations (FDCs) are found in many prescriptions which include antibiotics, multivitamins, analgesics, and cold and cough preparations. Although FDCs have their advantages, their widespread use can lead to issues such as polypharmacy, drug interactions, and antimicrobial resistance. Healthcare providers should be cautious when prescribing these combinations, making certain that their use is based on evidence and clinically necessary.[37]

Hospitalized children with typhoid fever were part of the research study. Ceftriaxone was the antibiotic that was most frequently prescribed, but the recommended dosage was not always followed. For the remaining patients, alternative antibiotics were used. The clinical symptoms of the disease included fever, anorexia, cough, abdominal pain, and diarrhea. The study emphasizes the significance of implementing comprehensive management approaches and strategies that can improve adherence to treatment guidelines, and optimize antibiotic selection and dosing.[8]

Febrile seizures are the most common seizures observed in pediatric patients. AEDs such as clobazam and midazolam are widely prescribed and used in 71% and 69% of cases, respectively. Combination therapy is employed in 31% of cases, with clobazam and midazolam being the most commonly used regimen. It is important to conduct further research to assess the long-term effectiveness and safety of AEDs in the pediatric population.[38]

Gender and ethnic disparities were found in antibiotic prescribing practices, with female and pediatric patients receiving antibiotics more frequently. Penicillin and cephalosporins were the most commonly prescribed antibiotics for infectious conditions, with empirical therapy being preferred. The study emphasizes the need for targeted interventions to promote responsible antibiotic use and monitor antibiotic resistance patterns.[28]

In a study conducted on 51,066 individuals diagnosed with COVID-19, it was found that corticosteroids, remdesivir, IL-6 inhibitors, and Janus kinase inhibitors were frequently used in the initial and subsequent drug regimens. The combination of corticosteroids and remdesivir with IL-6 inhibitors indicates a growing trend toward targeting specific inflammatory pathways in severe cases of COVID-19. It was observed that IL-6 inhibitors were more commonly prescribed than Janus kinase inhibitors in patients requiring advanced respiratory support[28]

Research involving 51,066 COVID-19 patients revealed that initial drug regimens commonly included corticosteroids, remdesivir, IL-6 inhibitors, and Janus kinase inhibitors. In patients who required advanced respiratory support, IL-6 inhibitors were more frequently prescribed than Janus kinase inhibitors. The study indicates a trend toward using multimodal therapeutic approaches in managing COVID-19.[28]

Research was carried out on 310 individuals, among whom 84 were advised to take steroids. Among all the steroid prescriptions, Budesonide was the most commonly prescribed drug, accounting for 39% of all steroid prescriptions. In 42.9% of cases, systemic administration was preferred. The research also concluded that varying degrees of drug interactions were identified, with 13.5% classified as major. The results emphasize the importance of careful monitoring and pharmacovigilance in patients receiving steroids.[12]

A higher prevalence of RA was observed in females according to a study involving 400 patients. The age group that was most affected was between 50 and 69 years old. Methotrexate was found to be the most common treatment for RA. Comorbidities were prevalent, with anemia, hypertension, and type II diabetes mellitus being the most common ones. It is important to pay attention to infections linked to RA, such as tuberculosis and urinary tract infections.[14]

The study found that critically ill adults receive a higher number of drugs than children and neonates. Adults also receive higher dosages of broad-spectrum antibiotics. Additionally, the study found differences in the duration of antibiotic therapy and patient perceptions regarding antibiotic necessity. Tailored therapeutic approaches are essential to address the unique pharmacotherapeutic needs of critically ill patients based on age and clinical condition.[39]

Research conducted on pediatric clinics discovered that prescription patterns and medication use vary among different clinics. On average, each consultation resulted in 1.8 ± 1.3 prescribed medications, while the respiratory clinics showed a higher average of 2.1 prescriptions per consultation. Antibiotic prescriptions were

given in 19.5% of cases overall, but a significantly higher percentage of antibiotic prescriptions was observed in respiratory clinics (50.8%).[19]

Antimicrobial agents were commonly prescribed in ICUs, frequently in combination with gastrointestinal drugs. To avoid the development of antimicrobial resistance, it is important to prescribe these drugs rationally. The promotion of appropriate prescribing protocols and guidelines is crucial to support rational drug use and achieve the best possible patient outcomes.[9]

CONCLUSION

There has been an increase in the use of BZRAs among patients with anxiety disorders, particularly elderly females, according to a study. Educating both healthcare providers and patients about the risks associated with long-term use of BZRAs is essential. To reduce reliance on BZRAs for anxiety management, promoting awareness of non-pharmacological alternatives is also important. Optimizing prescribing practices and encouraging judicious use of BZRAs can significantly improve patient safety and outcomes in anxiety management.[13]

Polypharmacy is prevalent among up to 51% of participants, with the elderly population being particularly affected. Cardiovascular medications contribute significantly to this issue. Urgent action such as deprescribing and optimizing doses is needed to mitigate the risks of falls and other adverse effects associated with polypharmacy in the elderly population. Healthcare professionals should pay special attention to the unique needs of the elderly and proactively manage medication regimens to enhance patient safety and minimize risks.[34]

This research examines the use of medication among patients with rare diseases across different age groups and therapeutic categories. The study found that drug usage rises as adult patients age, while in children, it reaches its peak between ages 0-4. Early and elevated drug intake relative to the general population contributes to a heavy burden of drug treatment. Adults primarily use drugs for the alimentary tract, while anti-infectives for systemic use are prevalent among both adult and pediatric populations. Pediatric patients use drugs targeting the nervous system more intensively than other therapeutic categories. The study also noted sex differences, with female adult patients showing a higher prevalence of drug use and consumption.[7]

Effective regulatory interventions led healthcare professionals to switch from ranitidine to proton pump inhibitors, demonstrating their responsiveness to evolving safety considerations. Consistent surveillance and regulatory oversight are crucial to ensure the safety and effectiveness of drugs. It is important to conduct further research to evaluate the long-term effects of regulatory interventions on prescribing patterns and patient outcomes.[35]

Osteoarthritis is a complicated condition that affects synovial joints. Patients who suffer from this condition experience pain due to various factors such as medication usage, dietary habits, stress, obesity, and age. The discomfort is often worsened due to a lack of knowledge about OA. Therefore, patient education and support play a crucial role in managing OA. This involves counseling, health education, and providing information during follow-up appointments. By taking a holistic approach that addresses medical interventions and lifestyle modifications, individuals are empowered to better manage their OA symptoms and improve their overall well-being. However, further research is required to evaluate the effectiveness of this approach.

A study conducted in Italy to investigate treatment patterns for psoriasis revealed that nearly half of the patients did not receive systemic medication. In contrast, the utilization of Interleukin inhibitors has increased, whereas the use of Tumor Necrosis Factor inhibitors has declined. The study findings emphasize the importance of optimizing treatment and addressing the persistent unmet medical needs of patients suffering from psoriasis.

Antimicrobial medications prescribed in Brazilian ICUs saw a rise during the COVID-19 pandemic, particularly in the initial months. COVID-19 patients were more likely to be administered broad-spectrum antimicrobials. The use of the DOT metric reveals that antimicrobial use was lower compared to the DDD metric, which tends to overestimate it. [29]

An analysis was conducted on medication persistence and treatment-switching patterns in psoriasis patients using multiple databases. The data showed that patients had poor persistence to medications and switching treatments was infrequent. These findings highlight the importance of conducting research and implementing interventions to enhance treatment outcomes in managing psoriasis.[17]

More than 50% of the prescriptions evaluated in this study were comprised of fixed-dose combinations (FDCs), with only a third prescribed by generic names. The primary route of usage was oral administration, and antimicrobials were the most frequently prescribed category. The analysis showed that FDCs are significantly less expensive than individual drug combinations. However, further examination is needed to optimize prescribing practices and rationalize drug therapy.[37]

This research investigates the efficacy of ceftriaxone in treating Surat's hospitalized children with S. Typhi infections. The study indicates that the treatment plan deviates from the recommended guidelines for managing typhoid fever in children. The research identifies resistance to ceftriaxone, which may pose challenges to the effectiveness of the treatment. To combat this, the report recommends public health initiatives to minimize contact with human carriers, enhance personal hygiene practices, and implement healthcare behavior strategies.[8]

The present study investigated to examine the occurrence of seizures in patients diagnosed with epilepsy, with a specific focus on male patients. The study also aimed to analyze the corresponding prescriptions of antiepileptic drugs (AEDs). The primary objective of the study was to evaluate the usage of AEDs for generalized seizures, which were found to be the most commonly observed seizure type. The results of the study revealed that Clobazam was the most frequently prescribed AED, and it was generally administered in combination with Midazolam. Additionally, the preferred method of drug delivery was oral administration. The study's findings offer valuable insights into the management of medication for epilepsy patients, with significant implications for patient care and drug development in this domain.[40]

The most commonly prescribed antibiotics and their clinical indications were analyzed in this study. The classes of penicillin and cephalosporins were found to be prescribed most frequently. The most prevalent disease condition for which antibiotics were prescribed was pneumonia. The study aims to encourage optimal medication therapy and assist in making informed decisions regarding antibiotic therapy.[14]

This research aims to analyze the application of biological therapy among patients suffering from Crohn's disease and ulcerative colitis. The study primarily emphasizes assessing conformity with the treatment guidelines. As per the recommendations, the majority of the patients were administered infliximab for their first-line treatment, which was by the guidelines. However, there were some deviations from the guidelines and a higher rate of discontinuation of adalimumab as a first-line treatment, which requires further investigation.[29]

The misuse of medication can result in unsuccessful treatment, drug conflicts, higher medical expenses, and possible addiction to medication. Better prescribing practices can be achieved through regular scrutiny of medication usage patterns. In India, a lack of participation by clinical pharmacists contributes to irrational medication use in hospitals. Clinical pharmacists can directly engage with patients to evaluate medication plans and promote the appropriate usage of steroids through education and evidence-based guidelines.[14]

This research focused on how rheumatoid arthritis (RA) and its associated infections are treated with medication. The most commonly prescribed drugs were DMARDs (39.2%), followed by analgesics (25.2%) and NSAIDs (22.2%). Methotrexate was the most frequently prescribed DMARD. RA patients were most commonly affected by TB, which was effectively treated with suitable antibiotics. The study highlights the significance of reasonable drug usage and provides healthcare providers with insights into current RA management trends.[14]

This study explores the use of drug classes among critically ill patients of different ages, particularly focusing on antimicrobial therapy. There are significant differences in the primary drug classes used, particularly in terms of the nature and type of antimicrobial drugs prescribed, and variations in the duration of antimicrobial therapy. These findings emphasize the importance of age-specific treatment approaches for critically ill patients.[39]

This research investigates the practices of prescribing and conformity to WHO guidelines in clinics that provide healthcare for children. While certain clinics adhere to the guidelines set forth by WHO, others choose to deviate from them, particularly in their adherence to the essential drug list, usage of injectable drugs, and prescribing of antibiotics. The results of this study emphasize the importance of targeting pediatric clinics and implementing national strategies to ensure that optimal healthcare is provided to children.[41]

The significance of monitoring drug utilization patterns and the part played by clinical pharmacists in promoting evidence-based practices is emphasized in this review. According to the studies analyzed, clinical pharmacists have a crucial role in optimizing drug therapy and ensuring rational prescribing, resulting in enhanced healthcare outcomes.

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