



Evaluate Pediatric (Between 2 Months to 5 Years) Prescriptions in Misurata Hospitals

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Abstract:

The rationalization of drug consumption is necessary to reduce its side effects and prevent the occurrence of bacterial resistance. There is no clear information on the local prescribing of medicines, although reports of the Ministry of Health indicate sometimes unjustified prescribing of children's diseases. Moreover, the objectives of this study are to evaluate the number of drugs prescribed in one prescription, study the percentage of prescribed injections, and study the percentage of prescribed antibiotics. The study was conducted during the year 2019, by distributing several questionnaires to pharmacies in the city of Misurata, and the study included only children from the age of 2 months to 5 years. In addition, it was possible to analyze 69 prescriptions, and those that were outside the study criteria were excluded. The prescribing rate for the injection was much higher than the WHO recommendations (13.4%). Also, the percentage of prescribing antibiotics was very high (56.52%). Most of the prescriptions contained three medicines, which complied with health standards. The most common pharmaceutical form prescribed for children was syrups, as all prescriptions contained syrup. We conclude that there is an unjustified increase in prescribing injections and antibiotics. Moreover, referencing global guidelines with some modifications to them may be an acceptable solution to rationalize drug consumption.

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I. INTRODUCTION

The drug is a substance used as a medication or in the preparation of medication; there are some routes of drug administration such as: Orally, rectally, injection, inhalation and topical application.

Monitoring the safety of medicines used in children is critical, given only a small amount of data on this subject is generated during the clinical development of medicines. Off-label and off-license use are defined as the use of medications beyond the specifications specified in the license (e.g. in terms of formulation, indications, contraindications, or age), and these are a major source of worry (WHO,2007).

Incorrect dosage results in acute toxicity or therapeutic failure. For example, a normal dose of phenobarbital of 15 mg/kg daily will almost certainly be insufficient for a baby with seizures, as loading doses of greater than 20 mg/kg are frequently required and a maintenance dose of 5 mg/kg may already be sufficient. Additionally, cultural differences might result in misinterpretation of medication instructions, particularly package insert material and information advocating sensible drug use. The majority of medications are dosed in children based on their body weight (mg/kg) or body surface area (BSA) (mg/m²). Before calculating doses based on body weight, care must be taken to appropriately convert body weight from pounds to kilograms (1 kg= 2.2 lb).

Differences Between Pediatric Populations and Adults

The pediatric population encompasses a range of physiological characteristics, and children should not be seen as "miniature men and women." From the very small preterm newborn infant to the adolescent, the spectrum spans. The following is the universally agreed upon, and to some degree arbitrary, classification of the pediatric population (ICHE 11, 2000):

- Preterm newborn infants
- Term newborn infants (0 to 28 days)
- Infants and toddlers (> 28 days to 23 months)
- Children (2 to 11 years)
- Adolescents (12 to 16 to 18 years, depending on the region).

(Ages are defined as incomplete days, months and years.)

Gastrointestinal Tract and Oral Absorption

For the gastrointestinal tract, clinically significant developmental changes that may have an impact on oral medicine absorption occur mostly during the birth period, infancy, and early childhood. Gastrointestinal medicine-metabolizing enzymes and transporters are affected as well as acidity in the stomach, gastric emptying time, gut motility, gut surface area, secretion of bile acids and pancreatic lipase, enterohepatic recirculation, gut bacterial colonization, and dietary intake at various ages and times of the day. For example, the amount of stomach acid secreted by preterm and term newborns is significantly reduced. The stomach emptying time in newborns is likewise somewhat protracted.

Since acid-labile drugs like benzyl penicillin and ampicillin are highly absorbed during the newborn period, while medicines like phenytoin, phenobarbital, and rifampicin are poorly absorbed. Gastric contents retrograde entering the esophageal cavity is also prevalent in the first year of life (Sondheimer J, 1988).

Medicine Distribution

Because plasma protein binding in neonates and especially premature babies is lower than in adults, the amount of unbound "free" drugs in the blood can be increased. Neonates have a partially functioning blood-brain barrier.

Hepatic and Renal Function and The Elimination Process

The elimination capabilities of neonates, babies, and toddlers vary significantly. In general, the more preterm the newborn, the lower the capacity of the liver to metabolize and the kidneys to excrete. The various hepatic and renal functions mature at a variable rate during the first year of life (Weaver LT, et al, 1991).

The purpose of the present study was to evaluate pediatric prescriptions in Misurata hospitals and their conformity with WHO standards.

Specifically, this study sought answers to the following:

- The average number of drugs prescribed in one prescription.
- The percentage of prescribed injections.
- The percentage of prescribed antibiotics.

II. METHODS

According to Polit and Hungler (2013), the quantitative description includes the prevalence, incidence, size and measurable attributes of a phenomenon.

Descriptive research is also called statistical research. The idea behind this style of study is to analyze frequencies, averages, and other statistical calculations (Burns N, Grove S, 1999).

The research instrument used in the study was a self-made questionnaire. The questionnaire consists of the name of the patient, age of the patient, prescription source, number and type of antibiotics, and the number of injections.

Entry criteria:

- The child should be between two months to five years.
- The patient must be out-patient.

Output criteria:

- Any child under two months and over five years old.
- Injuries outside the scope of childhood diseases (surgery, and accidents).

Search location:

Pharmacies in Misurata were selected randomly. A total of (69) patients were involved in this study.

Statistical tools:

Gathered data were classified, tabulated and analyzed using Microsoft Office Excel. Statistical data were interpreted using descriptive statistics employing the following:

Frequency distribution was used for the respondents to determine the total number of respondents. The following formula computes the frequency distribution:

The percentage is a hundred times the proportion. The formula to obtain percentage is:

$$P = \text{frequency} / \text{total number of cases} \times 100$$

III. FINDING

This section deals with the presentation of the data gathered from the respondents through the Evaluate pediatric (between 2 months to 5 years) prescriptions in Misurata hospitals for this study. Frequency, percentage and weighted mean were used as statistical treatments. The results guided the researcher in making recommendations, find out the pediatric (between 2 months to 5 years) prescriptions in Misurata hospitals. The information gathered from the participants is presented in the Figures of Tables and charts.

Table 1: Frequency and percentage distribution of the number of drugs prescribed

The number of drugs	Frequency (f)	Percentage (%)
Prescriptions contain four drugs	12	17.39%
Prescriptions contain three drugs	40	57.97%
Prescriptions contain two drugs	13	18.84%
Prescriptions contain One drugs	4	5.79%
Total	69	100%

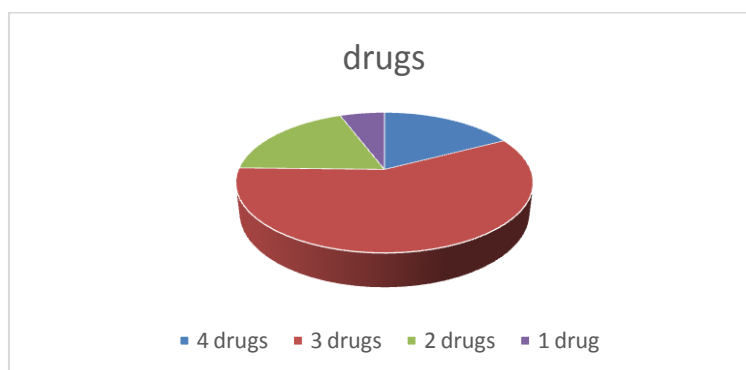


Figure 1: percentage distribution of several drugs prescribed.

Table 1 and Figure 1 show that most prescriptions contain three drugs; statistics have shown that 17% of prescriptions contain three drugs, while 18.84% of prescriptions contain two drugs. The prescriptions that contain four medicines come in the third rank, at a rate of 17.39%, followed by the prescriptions that contain one drug, which comes at a rate of 5.79%. Through these results, it is clear that most of the prescriptions for pediatrics in Misurata contain three drugs, which makes them conform to the standards set by the World Health Organization (WHO).

Table 2: The percentage of pharmaceutical forms described

Pharmaceutical Forms Described	Frequency (f)	Percentage%
Injection	9	13.04%
Cream and Ointment	6	8.69%
Syrup	69	100%
Tablet and capsule	0	0%
Drop	15	21.73%
Suppository	5	7.24%

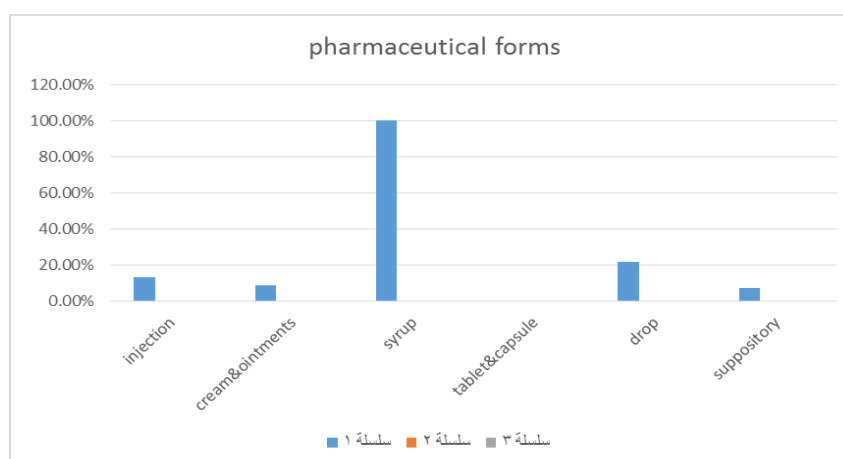


Figure 2: percentage of pharmaceutical forms described.

Table 2 and Figure 2 show that the major percentage distributions of pharmaceutical form are syrup by 100%; as all prescriptions contained syrup. While the percentage of drops was 21.73%. On the other hand, only 13.04% of prescriptions contain injections. In addition, 8.69% of prescriptions involve creams or ointments, and 7.24% of prescriptions contain suppositories. While all prescriptions do not contain tablets or capsules.

Table 3: The percentage of pharmaceutical forms of prescribed antibiotics

Pharmaceutical Form of Antibiotic	Frequency (f)	Percentage (%)
Drop	6	15.38%
Injection	3	7.69%
Syrup	23	58.97%
Cream & ointment	7	17.9%
Total	39	100%

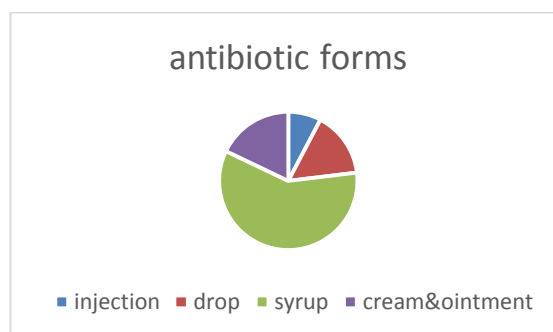


Figure 3: The percentage of pharmaceutical forms of prescribed antibiotics

The percentage of antibiotics is 56.52% of prescribed drugs. The prescriptions contain many pharmaceutical forms of antibiotics. Table 3 and Figure 3 show the percentage forms of antibiotics. This result tells us that a greater number of forms were syrup (58.97%), and then cream or ointment (17.9%), and drop (15.38%), the lowest number of pharmaceutical form is an injection (7.69%).

IV. Discussion

Through this study, we notice that there is a significant statistical difference between the numbers of drugs in one prescription. Where we find that 57.97% of prescriptions contain three drugs, which conforms with the World Health Organization (WHO). On the other hand, prescribed injection is too much (13.04%); and this percentage is much more than recommended by the World Health Organization (The limit does not exceed 10%). We also note that one of the most common pharmaceutical forms used to treat pediatrics is syrup; this means that syrup is considered one of the safe forms of pharmaceutical use for children. On the contrary, tablets are considered one of the pharmaceutical firms that are not suitable for use by children. As that prescribed antibiotic represents a very large percentage, reaching 56.52%. In addition, it was possible to make a comparison with two previous studies: (D.Maiga) in the republic of Mali 2006, and Ahmed Sherteh in Damascus 2010. The study in Mali 2006 showed that there is a much higher injection rate than the World Health Organization suggests, reaching 33%. The rate of prescribed antibiotics is close to 30% of the total prescriptions. As well as the study conducted in Damascus 2010, the percentage of prescribed injections was an exaggeration of 16.46%. In addition, the prescribed antibiotics were as high as 29.42%.

Table 4: The comparison between our study and another two studies

The Research	Year	Injection	Antibiotic
Mali	2006	33%	30%
Damascus	2010	16.46%	29.42%
Misurata	2019	13.04%	56.52%

The widespread consumption of antibiotics is because diagnostic tests are not routinely used due to the extra cost, and also the time required for such checks. The parents remain in a state of anxiety and tension, but this in itself is not a sufficient justification for such healthy practices that contradict the fact that most of the first childhood infections are of viral origin. However, the absence of a pathological diagnosis recorded on the prescription does not allow any conclusion to be reached regarding the existence of indications for the prescription of the antibiotic, at least. And this was not originally from the objectives of this study, given its design method, which did not address the problem of causal diagnosis of the disease, and this may be an entry point for a future study.

V. CONCLUSION

We should be aware that it is not always easy to establish a definitive diagnosis of all disease states based on a clinical examination. On the other hand, we must be aware of the pressures that parents may exert and have to prescribe antibiotics, given the costs of laboratory investigations. This may be due to a lack of

awareness among service recipients about the risk of randomly prescribing antibiotics without a definite indication. Reliance on guidelines has greatly contributed to reducing drug and antibiotic consumption. We also hope that children under the age of five will consume antibiotics and syringes, at least in clinic patients (outpatients).

REFERENCES

- [1]. Burns, N. and Groe, S.K. (1999). *Understanding Nursing Research*. 2nd edition. United States of America: W.B. Saunders Company.
- [2]. D.Maigna, A et al. Evaluation de la Prescription Rationnelle et de la dispensation des Medicaments au Mali. *rev. epidemiolo Sante Publique*. 2006 54: 497-505.
- [3]. Polit D., and Hunhler B., (2013): *Essentials of Nursing Research*, 5th Ed, Lippincott, New York, pp: 172-178.
- [4]. Sondheimer J. Gastroesophageal reflux: update on pathogenesis and diagnosis. *Pediatric Clinics of North America*, 1988, 35:103-116.
- [5]. ICH E 11 Clinical investigation of medicinal products in the pediatric population. Published in the UK in EU: Note for guidance on clinical investigation of medicinal products in the pediatric prescribed population (CPMP/ICH/2711/99). London, 2000; and in the US in the US: International Conference on Harmonization. Guidance on E 11 clinical investigation of medicinal products in the pediatric population; Notice. *Federal Register*, 2000, 65:78493-78494.
- [6]. Weaver LT, Austin S, Cole TJ. Small intestinal length: a factor essential for gut adaptation. *Gut*, 1991, 32:1321-1323