

THE PRACTICE OF PRESCRIBING MEDICATIONS BY THE DOCTORS IN THE MAIN MEDICAL FAMILY CENTER OF MALISHVË - KOSOVO DURING 01.06.2016 – 31.12.2016

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Abstract

This study examines medication prescription practices at the main Medical Family Center in Malishevë, Kosovo, from June to December 2016. With a focus on rational prescription in family medicine, the analysis of 4200 patient visits reveals an average of 2.63 medications per visit. Notable variations exist among clinics and shifts, with general practitioners, particularly in dayshift II, displaying higher prescription rates. Proposed measures for improvement include national therapeutic protocols, increased involvement in Family Medicine, professional development, public health education, and ethical-legal laws.

Index Terms— Main Medical Family Center; medications; prescription; Clinic, WHO.

I. INTRODUCTION

Family medicine is the place where citizens receive various types of health services. This includes, first and foremost, health promotion, disease prevention, early diagnosis, treatment of diseases, information of population in different health topics. As for Kosovo, based on the Administrative Instruction (Health) No. 04/2020, concept of family medicine consists in providing health care services to the individual and family at all stages of life, based on scientific data, through the family doctor as a selected doctor who will be an entry point for all service seekers in the health care system and at the same time as a reference point for specialist consultants in Primary Health Care and other levels of health care [1]. When it comes to treatment, of all the activities involved in Family Medicine, the prescription of medications has the highest potential to generate health benefits or cause harm [2]. For this reason, the rational prescription of medications should have a central place in evaluating the knowledge of Family Physicians, a position that would contribute to encouraging the improvement of the quality of healthcare services [3]. A various of studies share similar conclusions when it comes to medical prescription as well. A study tells that: Misuse and abuse of prescription medication can be a difficult clinical area for physicians [4]. Despite the paramount importance of this aspect, our country's physicians, upon completing their studies, have yet to receive specialized training aimed at refining their prescribing skills. "Even today, the problem is almost the same, so the practice of irrational prescription of medications still continues" [5].

II. OBJECTIVES

The aim of this study is to determine the number of medications prescribed during a visit by the physicians at the Health Center "Dr. Shpëtim Robaj" in Malishevë. According to the World Health Organization (WHO), the recommended

number of prescribed medicines during a patient's visit should be 2 or fewer [3]. Taking into account that 77% of patients visiting Health Centers in Malisheva receive prescriptions, this could be a highly significant indicator of non-rational (excessive) prescribing of medications [6]. Simultaneously, it enables us to evaluate the quantity of medications prescribed by doctors in Health Centers. Through these objectives, the study aims to contribute to a nuanced understanding of medication prescription trends, thereby offering a basis for informed recommendations aimed at optimizing healthcare delivery in the Malishevë region.

III. METHODOLOGY

This study is a retrospective analysis of data derived from 4200 patient visits carried out by healthcare professionals at the Family Medicine Center "Dr. Shpëtim Robaj" in Malishevë. The investigation spanned a seven-month period, from June 01, 2016, to December 31, 2016. The primary data source for this study comprised the work protocols from the Family Medicine Center in Malishevë. These protocols meticulously documented information related to patient visits and prescription practices.

The cohort of healthcare professionals participating in the study included three internists, two pediatricians, and five general practitioners (both from day shifting and night shifting). The analysis encompassed a total of 4200 patient visits.

The average number of prescribed medications during a consultation has been calculated using the assistance of a statistical method, which is: Total number of prescribed medications / Total number of analyzed visits. This approach aimed to capture a representative snapshot of routine operations and prescription patterns during this period.

IV. RESULTS

The results obtained from this study are as follows: For 4200 patients, a total of 11050 medications were prescribed. This

means that, on average, 2.63 medications were prescribed per patient during a single visit.

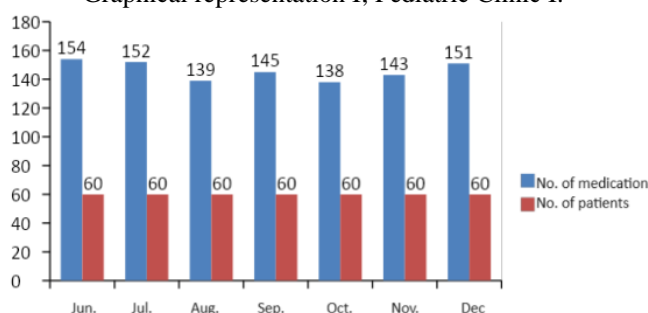
The monthly breakdown of prescribed medications at the medical center for Pediatric Clinic I is as follows: In June, 154 medications were administered at an approximate rate of 2.56 per visit. In July, 152 medications were prescribed, averaging around 2.53 per visit. August recorded 139 medications, with a rough average of 2.31 per visit. September saw 145 medications prescribed, averaging about 2.41 per visit. October had 138 medications, approximately 2.3 per visit. November showed 143 medications prescribed at an average of around 2.38 per visit. In December, 151 medications were prescribed, with a rough average of 2.51 per visit. The overall average medication prescription across all months stood at approximately 2.42 medications per visit. Throughout the study, a total of 1016 medications were prescribed for a total of 420 visits. (Table I)

TABLE I
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR PEDIATRIC CLINIC I.

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	154	60	2.56
July	152	60	2.53
August	139	60	2.31
September	145	60	2.41
October	138	60	2.3
November	143	60	2.38
December	151	60	2.51
Total:	1022	420	2.43

The graphical representation of medication prescriptions in relation to the number of patients for Pediatrician I is as follows:

Graphical representation I; Pediatric Clinic I:



As per medical center Pediatric II, is as follows: In June, 155 medications were prescribed, resulting in an average of 2.58 medications per visit out of a total of 60 analyzed visits. July saw 160 medications prescribed, averaging 2.66 medications per visit over the course of 60 visits. Month August recorded 168

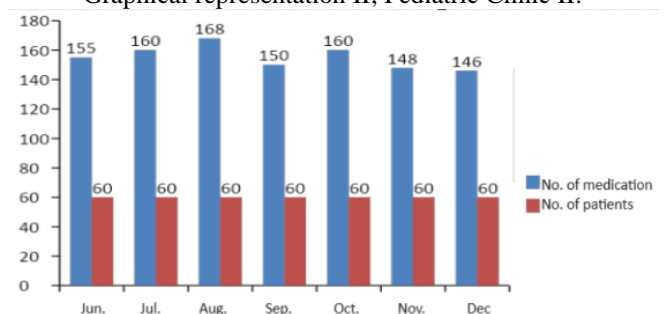
medications, with an average of 2.8 medications per visit during the 60 visits analyzed. In September, 150 medications were prescribed, averaging 2.5 medications per visit across 60 visits. October witnessed 160 medications prescribed, with an average of 2.66 medications per visit. November had 148 medications prescribed, averaging 2.46 medications per visit for 60 visits. In December, 146 medications were prescribed, resulting in an average of 2.43 medications per visit. The overall average medication prescription across all months stood at 2.58 medications per visit. Throughout the study, a total of 1087 medications were prescribed for a total of 420 visits. (Table II)

TABLE II
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR PEDIATRIC CLINIC II.

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	155	60	2.58
July	160	60	2.66
August	168	60	2.8
September	150	60	2.5
October	160	60	2.66
November	148	60	2.46
December	146	60	2.43
Total:	1087	420	2.58

And the graphical representation of medication prescriptions in relation to the number of patients for Pediatrician II is as below:

Graphical representation II; Pediatric Clinic II:



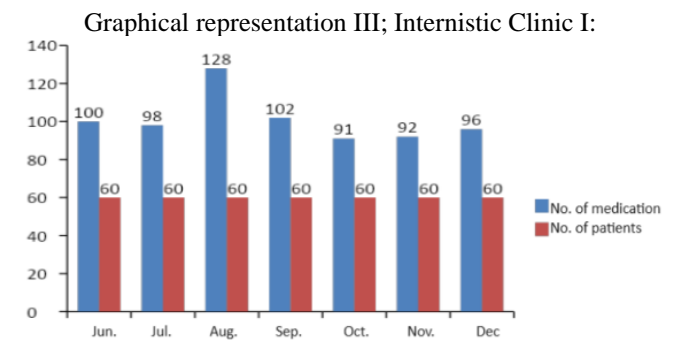
During the observation period, the monthly prescription dynamics at the Internistic Clinic I, unfold uniquely: In June, 100 medications were prescribed, amounting to an average of 1.66 medications per visit across the 60 analyzed visits. The subsequent month of July witnessed a prescription count of 98 medications, with an average of 1.63 medications per visit over the course of 60 visits. August marked a notable increase in prescriptions, with a total of 128 medications and an average of 2.13 medications per visit during the 60 visits analyzed. In September, 102 medications were prescribed, leading to an average of 1.7 medications per visit over 60 visits. October

exhibited a decrease with 91 medications prescribed, reflecting an average of 1.51 medications per visit, which we can say was the lowest rate of all. November and December continued this trend, with 92 and 96 medications prescribed, respectively, resulting in averages of 1.53 and 1.6 medications per visit for 60 visits each. The overall analysis reveals a distinct average of 1.68 medications per visit across all months. Over the course of the study, a total of 707 medications were prescribed for the 420 visits included in the analysis. (Table III) We can say that compared to all other clinics, this one has had the lowest number of prescribed medications, and the lowest average indeed.

TABLE III
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR INTERNISTIC CLINIC I.

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	100	60	1.66
July	98	60	1.63
August	128	60	2.13
September	102	60	1.7
October	91	60	1.51
November	92	60	1.53
December	96	60	1.6
Total:	707	420	1.68

Below is the graphical illustrating the correlation between medication prescriptions and the patient count for Internistic I:



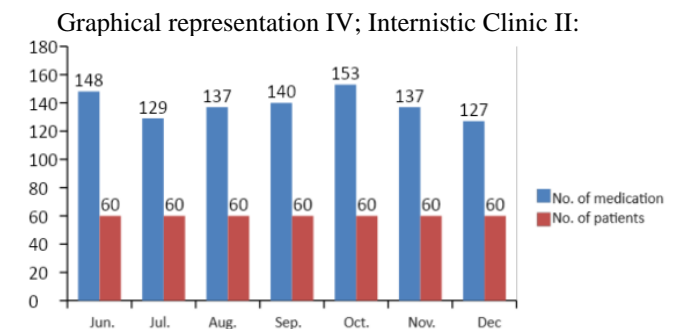
At the Internistic Clinic II, during June, 148 medications were prescribed, averaging 2.46 medications per visit across 60 analyzed visits. July saw a decrease with 129 medications and an average of 2.15 medications per visit for 60 visits. August recorded 137 medications, averaging 2.28 per visit, and September maintained a similar trend with 140 medications and an average of 2.33 per visit over 60 visits. October exhibited an increase, prescribing 153 medications with an average of 2.55 per visit. In November, 137 medications were prescribed, reflecting an average of 2.28 per visit. December witnessed 127

medications prescribed, averaging 2.11 per visit. The overall analysis indicates a consistent average of 2.31 medications per visit across all months, with a total of 971 medications prescribed for the 420 visits included in the study. (Table and Graphical representation IV)

TABLE IV
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR INTERNISTIC CLINIC II.

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	148	60	2.46
July	129	60	2.15
August	137	60	2.28
September	140	60	2.33
October	153	60	2.55
November	137	60	2.28
December	127	60	2.11
Total:	971	420	2.31

Below we have shown the graphical representation for the Intrinsic Clinic II:



As per Internistic Clinic number III, in June, there were 163 prescribed medications for 60 visits, averaging 2.71 medications per visit. In July, 154 prescribed medications for 60 visits, with an average of 2.56 medications per visit. Continuing in August that recorded 167 prescribed medications for 60 visits, resulting in an average of 2.78 medications per visit. September had 156 prescribed medications for 60 visits in total, and that led to an average of 2.6 medications per visit. October showed 135 prescribed medications for 60 visits, averaging 2.25 medications per visit. November reported 114 prescribed medications for 60 visits, resulting in an average of 1.9 medications per visit. December had 133 prescribed medications for 60 visits, with an average of 2.21 medications per visit. The cumulative data for the entire period is summarized at the bottom of the table, indicating a total of 1022 prescribed medications for 420 visits, with an overall average of 2.43 medications per visit.

TABLE V
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR INTERNISTIC CLINIC III

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	163	60	2.71
July	154	60	2.56
August	167	60	2.78
September	156	60	2.6
October	135	60	2.25
November	114	60	1.9
December	133	60	2.21
Total:	1022	420	2.43

And the graphical representation of medication prescriptions in relation to the number of patients for Internistic Clinic III is as below:

Graphical representation V; Internistic Clinic number III:

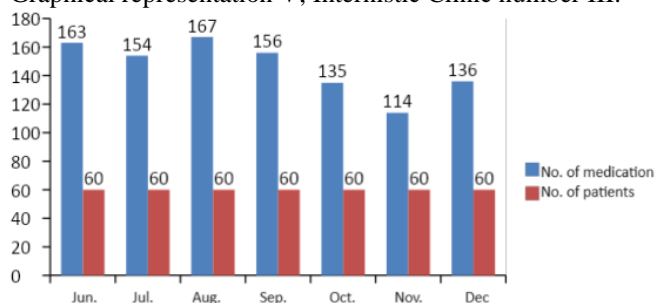


Table VI provides an overview of the connection between medications and patient data for Dayshift General Practitioner Clinic I, segmented by month. The data includes the total count of prescribed medications, the total number of visits analyzed, and the average number of prescribed medications per visit.

In June, 154 medications were prescribed for 60 visits, resulting in an average of 2.56 medications per visit. July witnessed 147 prescribed medications for 60 visits, with an average of 2.45 medications per visit. August documented 165 prescribed medications for 60 visits, averaging 2.75 medications per visit. September recorded 148 prescribed medications for 60 visits, yielding an average of 2.46 medications per visit. October showed 132 prescribed medications for 60 visits, averaging 2.2 medications per visit. November reported 163 prescribed medications for 60 visits, resulting in an average of 2.71 medications per visit. In December, 158 medications were prescribed for 60 visits, with an average of 2.63 medications per visit.

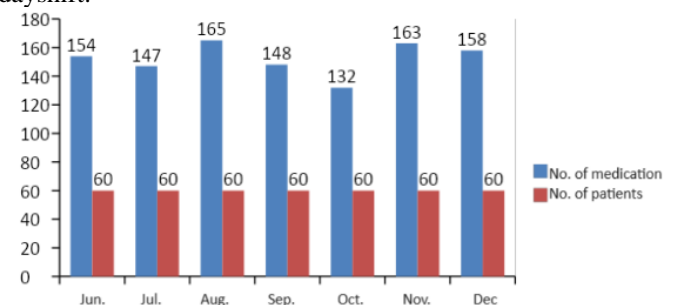
The aggregated information for the complete duration is consolidated at the base of the table, revealing a collective prescription of 1067 medications across 420 visits, resulting in an average of 2.54 medications per visit.

TABLE VI
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR DAYSHIFT GENERAL PRACTITIONER CLINIC I

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	154	60	2.56
July	147	60	2.45
August	165	60	2.75
September	148	60	2.46
October	132	60	2.2
November	163	60	2.71
December	158	60	2.63
Total:	1067	420	2.54

And the graphical representation of medication prescriptions in relation to the number of patients for General Practitioner Clinic I, for day shifting, is as below:

Graphical representation VI, General Practitioner Clinic I, dayshift:



Throughout the observed timeframe, the medical center of General Practitioner II (dayshift) demonstrated notable prescription patterns. In June, 216 medications were prescribed, reflecting an average of 3.6 per visit. July surpassed this with 229 prescriptions, averaging 3.81 per visit, and August maintained a comparable trend, prescribing 228 medications at an average of 3.8 per visit. September witnessed a decrease with 178 prescriptions, averaging 2.96 per visit. In October, the prescription count increased to 218, averaging 3.63 per visit, and November reached the highest count at 237 prescriptions, averaging 3.95 per visit. December recorded 215 prescriptions, averaging 3.58 per visit. Overall, the average prescription rate for this period was 3.62 medications per visit, totaling 1521 prescriptions for the 420 visits included in the study. (Table VII and Graphical)

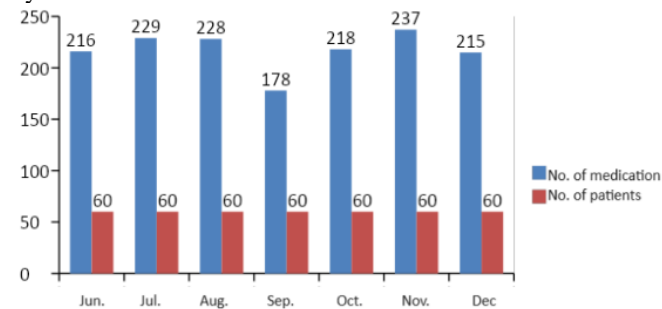
It is noteworthy that when compared to other clinics, General Practitioner Clinic II of day shifting has shown the highest number of prescribed medications, which also leads to the highest average of medications prescribed as well.

TABLE VII
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR DAYSHIFT GENERAL PRACTITIONER CLINIC II

Table with 4 columns: Month, Total number of prescribed medications, Total number of analyzed visits, and The average number of prescribed medications per visit. Rows include months from June to December and a Total row.

And the graphical representation of medication prescriptions in relation to the number of patients for General Practitioner Clinic II, day shifting is as below:

Graphical representation VII; General Practitioner Clinic II, dayshift:



In the General Practitioner Clinic for day shifting number III, in June 174 medications were prescribed, averaging 2.9 medications per visit. July marked an increase with 196 prescriptions, averaging 3.26 medications per visit, and August continued the trend with 214 medications at an average of 3.56 per visit. September experienced a slight decrease with 157 prescriptions, averaging 2.61 per visit. October recorded 171 prescriptions leading to an average of 2.85 per visit, and November reached 182 prescriptions, averaging 3.03 per visit. December maintained a similar trend, prescribing 185 medications at an average of 3.03 per visit. The overall prescription rate for this period was 3.04 medications per visit, totaling 1279 prescriptions for the 420 visits included in the study (table VIII, Graphical Representation VII)

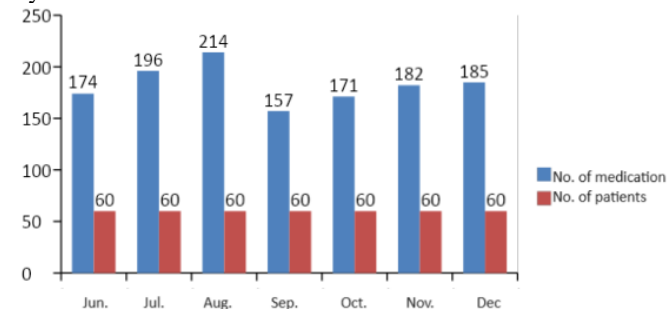
TABLE VIII

DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR DAYSHIFT GENERAL PRACTITIONER CLINIC III

Table with 4 columns: Month, Total number of prescribed medications, Total number of analyzed visits, and The average number of prescribed medications per visit. Rows include months from June to December and a Total row.

And the graphical representation of medication prescriptions in relation to the number of patients for General Practitioner III, day shifting is as below:

Graphical representation VIII; General Practitioner Clinic III, dayshift:



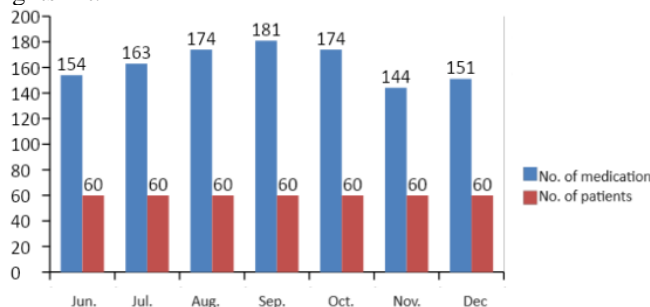
The medical center for night shifting General Practitioner Clinic I consistently prescribed medications during the observed period. Monthly averages ranged from 2.4 to 3.01 medications per visit. Starting from June, per 60 visits there were 154 medications prescribed by doctors, with an average of 2.56. July follows with a total of 164 prescribed medications per 60 visits and an average of 2.71. We had August, with 174 medications for 60 visits, leading to an average of 2.9 per visit. Then, September concluded a total of 181 medications per 60 visits, with an average of 3.01 per visit. October had shown a total of 174 medications for 60 visits, and led to an average of 2.9. November recorded 144 prescriptions, averaging 2.4 per visit. And, finally December reached a total of 151 medications prescribed per 60 visits and an average of 2.51 medications per visit The overall prescription rate for this period was 2.71 medications per visit, totaling 1141 prescriptions for the 420 visits included in the study. (Table IX, Graphical Prescription)

TABLE IX
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR NIGHTSHIFT GENERAL PRACTITIONER CLINIC I

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	154	60	2.56
July	163	60	2.71
August	174	60	2.9
September	181	60	3.01
October	174	60	2.9
November	144	60	2.4
December	151	60	2.51
Total:	1141	420	2.71

And the graphical representation of medication prescriptions in relation to the number of patients for General Practitioner Clinic I, night shifting is as below:

Graphical representation IX; General Practitioner Clinic I, nightshift:



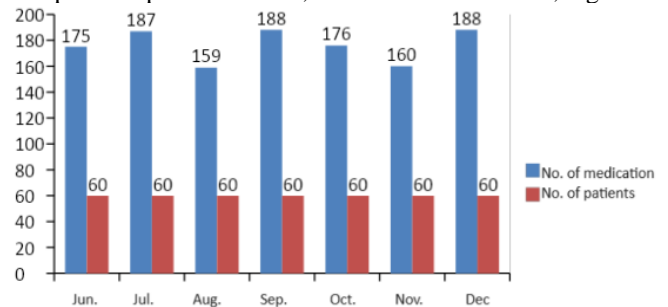
And the last medical center of General Practitioner for night shifting Clinic II consistently prescribed medications over the observed months. Monthly averages ranged from 2.65 to 3.13 medications per visit. Starting with June, 175 medications were prescribed per 60 visits, and an average of 2.91 was conducted. In July we had a higher average of 3.11, for 187 medications prescribed in 60 visits. August presented with 159 medications prescribed for 60 visits, and the average was 2.65 per visit. September had 188 prescribed medications for 60 visits, and the average was 3.13 for visits. In October the average was 2.66 medications per visit, while the whole month presented with 176 medications prescribed for 60 visits. November had a total of 160 medications prescribed per 60 visits. And last, was December with 188 medications prescribed for a total of 60 visits and an average of 3.13 medications per visit. The overall prescription rate of 2.93 medications per visit. In total, 1233 prescriptions were issued for the 420 visits included in the study. (Table X, graphical presentation X)

TABLE X
DESCRIPTION OF MEDICATIONS IN RELATION TO THE NUMBER OF PATIENTS FOR NIGHTSHIFT GENERAL PRACTITIONER CLINIC II

Month:	Total number of prescribed medications	Total number of analyzed visits	The average number of prescribed medications per visit
June	175	60	2.91
July	187	60	3.11
August	159	60	2.65
September	188	60	3.13
October	176	60	2.93
November	160	60	2.66
December	188	60	3.13
Total:	1233	420	2.93

And the graphical representation of medication prescriptions in relation to the number of patients for General Practitioner Clinic II, for night shifting is as below:

Graphical representation X; General Practitioner II, nightshift:



V. CONCLUSION

From the comprehensive analysis of this study, we deduce that the total number of patients from June to December amounts to 4,200, with a total of 11,050 medications prescribed for these patients. In comparison to the WHO criterion of two or fewer medications, although the average stands at 2.63 prescriptions per visit, there, for sure is room for improvement in this practice. (table XI, graphical representation XI)

TABLE XI
SUMMARY OF MEDICATION PRESCRIPTIONS AND VISITS BY CLINIC

Clinic	Total number of prescribed medications	Total number of analyzed visits	Average:
Pediatric Clinic I	1022	420	2.43
Pediatric Clinic II	1087	420	2.58

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Internistic Clinic I	971	420	2.31
Internistic Clinic II	707	420	1.68
Internistic Clinic III	1022	420	2.43
General Practitioner Clinic I, dayshift	1067	420	2.54
General Practitioner Clinic II, dayshift	1521	420	3.62
General Practitioner Clinic III, dayshift	1279	420	3.04
General Practitioner Clinic I, nightshift	1141	420	2.71
General Practitioner Clinic II, dayshift	1233	420	2.93
Total:	11050	4200	2.63

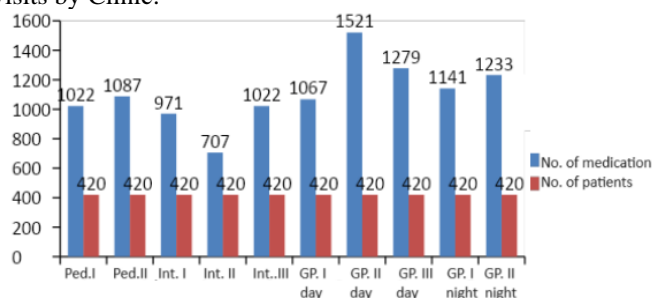
- Compilation of national therapeutic protocols.
- Full implementation of Family Medicine in our setting, as well as increased involvement of physicians in this field.
- Continuous professional development and other training programs contributing to the improvement of prescription practices.
- Public health education, including different trainings, seminars based on the latest guidelines for the prescription of medications for Primary Health Care.
- Development of ethical-legal laws.
- Audits for Primary Health Care Doctors and especially for General Practitioner.

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Regarding the overall prescription rate per patient, general practitioners exhibit an increase in the number of prescribed medications compared to other specialists who are specialized in specific fields (Pediatrics, Internal Medicine). Additionally, concerning the higher prescription rate among general practitioners, it is notable that the morning shift clinic has a higher number compared to the general practitioners of the afternoon shift.

Graphical Representation of medication prescription and visits by Clinic:



Proposal of Measures:

Based on the results obtained from this study, we have decided to propose the following measures, which should be considered fundamental: