

Assessment of Drug Use Pattern among Hajj Pilgrims Saudi Arabia, 1439h (2018)

Samar A. Amer¹, Sami I. Almudarra²

¹Associate Professor of Public Health and Community Medicine, Faculty of Medicine, Zagazig University. Membership at the Royal College of General Practitioners. The scientific consultant in the Assistant Agency of Preventive Health, Public Health Agency Ministry of Health (MOH), Saudi Arabia, Dr_samar11@yahoo.com

²Epidemiologist and Public Health Consultant, General Supervisor of Field Epidemiology Training Program, Assistant Agency of Preventive Health, Public Health Agency, Ministry of Health (MOH), Saudi Arabia, Sami7sky@hotmail.com

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Abstract: Hajj pilgrimage is the biggest and longest mass gathering, thus increase the risk of communicable and non-communicable diseases, so this study aimed to promote rational drug use and optimum provision of drugs among Hajj 1439 Pilgrims through the following objectives: To determine the prevalence and the context of the drug's use and to assess the drug use patterns among pilgrims. **METHODS:** A cross-sectional study was carried out on randomly selected 785 Hajj Pilgrims, stratified according to their countries before their retrial in King Abdul Aziz Airport in Jeddah: The studied pilgrims were 52.4 % male, 43.9% having chronic diseases, only 70.4% of studied pilgrims received medications, most of them were antibiotics 248 (33.8%), administered orally 470 (90.6%), for managing chronic diseases 341 (61.66%), only 50% had written prescription. Patient care indicators; more than 80% of pilgrims knowing the drug/s correct dose, and 69.4 knowing the expired date. Facility indicators; 77% of studied pilgrims reported accessibility of medications, and only 12.4% of the bought drugs had been checked, and 20.3% complaining of drug side effects mainly due to drugs unavailability. **Conclusions;** the drug use pattern is a prevalent and problematic issue among pilgrims due to many factors

Keywords: Drug, Pilgrims, Drug Use Pattern, Saudi Arabia

Introduction

Hajj pilgrimage is the biggest and longest mass gathering across the globe. It is physically demanding because of extreme physical stressors, such as extreme heat, sun exposure, prolonged stays at Hajj sites, dry environment, overcrowding, traffic congestion, air pollution, and rough and uneven ground. These increase the risk of communicable and non-communicable diseases.

Drugs are major components of medical care. Drug use is a complex subject influenced by factors such as drug availability, the prescriber's experience, knowledge of dispensers, health budget, cultural factors, and many more.

Rational Use of Drug (RUD) requires that patients acquire medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate period of time, and at the lowest cost to them and their community. To saves life and the economy of health care costs. It limits undesired toxicity and adverse events and maximizes the benefits that can be derived from optimal use of medications.

The irrational and inappropriate drug uses are common worldwide; the degree of the problem is higher where practices such as polypharmacy, the use of wrong or ineffective drugs, underuse or incorrect use of effective drugs, and overuse of antimicrobials and injections are very common. Worldwide more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take them correctly. Moreover, about one-third of the world's population lacks access to essential medicines.

The Hajj living circumstances and activities may create an environment; thus, health issues such as infections, accidents, a complication of chronic diseases, and climate complications may arise and affect the health of the pilgrims that require proper treatment. Essential medicines are not affordable to the majority of the population in developing countries. This results in sharing medicines that were prescribed to treat another person.

Currently, only a few studies are conducted on rational drug use in developing countries, including KSA. However, there is no similar study in haji season.

Therefore this study aims to describe drug use pattern factors among haji pilgrims to the optimum provision of drugs for pilgrims both during their stay in the country and upon their return home. Moreover, provide baseline information for researchers who are interested in conducting further studies to determine factors drug use pattern in these facilities. Therefore, this study aimed to improve the pilgrims' overall health status and optimize the effect of medications. Through the following objectives among Hajj 2018 pilgrims;-To estimates the prevalence (prescribed, over the counter medications), to study some determinants about the used drugs (the source, storage, burden, and indication), and to assess drug use patterns by using modified indicators (WHO core drug use indications).

Methodology

A Cross-sectional study, targeting randomly selected 785 Hajj Pilgrims who fulfilled the selection criteria :(aged 18 years old or above, without any mental or psychological disorders, and willing to participate) after completed the rituals of Hajj 1439H at the airport before returning to their home towns in King Abdul Aziz Airport-Islamic Port- the city of pilgrims in Jeddah were selected.

The sample size was calculated using the Open Epi website, with a total number of pilgrims in the hajj season 2,352,122 (1,752,014) of them are outside of the KSA. Whereas (600,108) are domestic, 95% confidence interval, 80% the power of the study ,and 10% lost or non-respondent rate. They enter KSA through any one of 16 ports of entry. The airports at Jeddah and Medina provide access to 94% of attendees; 5% enter through 11 land ports, and 1% enter through three seaports. Moreover, Sample size was calculated to the prevalence rate of chronic disease (66.7%).

Stratified as (12% indoor haji, and 88% outdoor haji), then to represent more than 80% of the haji populations stratified according to their countries quotes (156 Egyptian (19.9%), 144 Pakistani (18.3%), 163 Indonesian (20.8%), 103 Indian (13.1), 86 Bangladeshi (10.9%), 50 Turkish (6.4%), 44 Nigerian ((5.6%), and 14 Sudanic (1.8%).

Data collection tool: a well-structured, self-administrated, and pre-coded questionnaire after translated to seven languages, was used that composed of three main parts; (1) Data on socio-demographic characteristics of participants, (2) data about the used drugs (prevalence, types, sources, indication,...), and (3) the modified Standardized tool used by WHO/INRUD (International Network of Rational Use of Drugs) after adapted to consider the current situation that contains the following three domains; (A)Prescribing indicators include the average number of drugs per encounter; Percentage of drugs prescribed by generic name; Percentage of encounters with an injection prescribed. (B) Patient care indicators: Average consultation time, Average dispensing time, Percentage of drugs dispensed, Percentage of drugs adequately labeled, Patient's knowledge of correct dosage. (C) Health facility indicators; Availability of Drug therapeutics committee.

Data collection procedures and quality control: the data were collected in 10 days after One day of training the for-data collection team (qualified four FETP residents with a supervisor) on the questionnaire after being reviewed by Data collectors and supervisors for completeness and logical consistency, and been tested on 10% of sampled participants to reduce bias related to measurement, and/or misunderstanding. The collected data were appropriately analyzed using SPSS for windows version 16.0 statistical software program. Mean, median, standard deviation (sd), and the range was used for quantitative data summarized, while frequency (F) and percentage (%) was used for qualitative data summarization,

Ethical considerations: Participants got informed by written consent before answering the questionnaire. The questionnaire contained no sensitive or private questions, and their identity was anonymous. Official permission for the data collectors' team to enter the airport after the FETP Director's approval was obtained. In addition, approval was taken from the ethical committee of the research center at King Fahad Medical City no (18_421E approval 08/08/2018).

Results

The majority of the studied pilgrims were males 52.4 %, aged from 30 to less than 45 (34.5%), highly educated (58.5%), married (74.9%), sufficient monthly income (52.9%), medically examined before haji (52.9%), having chronic diseases (43.9%), stayed in KSA more than 14 days (79.2%).

During haji, only 70.4% of pilgrims received medications, the majority of them were antibiotics 248 (33.8%), administrated orally 470 (90.6%), prescribed by their private doctors 261 (47.2), for managing chronic diseases 341 (61.66%), and brought from their countries 345 (62.38%) (NB) painkiller is the main bought drugs (79.7%).

During haji, as regards A-Prescription practice indicators; Out of the 70% of haji who received medications, the majority of prescriptions contained 1-2 drugs (51.5%), antibiotics were 44.8%. Only 50% had written prescriptions. The written prescriptions were under the personal name (72.9%) and were written with the drug's generic name in 74.7%. B- Patient care indicators; the meantime in minutes(mins) for consultations was 16.4 mins, and 9.7 for dispensing, more than 80% of pilgrims knowing the drug/s correct dose and 69.4% knowing the expired date/s around 91% of the prescribed drugs were actually dispensed and fully labeled. C-Facility indicators; 77% of studied pilgrims reported accessibility of medications, only 34.9% Knowing about the Saudi FDA, and 12.4% of the bought drugs had been checked.

Table 1: The frequency distribution of the socio-demographic data among the studied pilgrims

	F	%
Age groups		
• <30y	145	18.5
• 30-<45y	271	34.5
• 45-<60y	257	25.7
• 60 and>60	112	14.3
Sex		
• Male	411	52.4
• Female	374	47.6
Level of Education		
• Illiterate	22	2.8
• Read and write		

	84	10.7
• Primary and preparatory	220	29.04
• High school or more	459	58.5
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• Read and write	84	10.7
• Primary and preparatory	220	29.04
• High school or more	459	58.5
Marital status		
• Married	588	74.9
• Single	6	0.76
• Widow	159	20.3
• divorced	32	4.1
The monthly Income		
• Insufficient	283	36.1
• Sufficient	415	52.9
• More than sufficient	87	11.0
Medically examined before haji		
• No	370	47.1
• Yes, self-effort	106	13.5
• Yes, with campaign	309	39.4
Having chronic disease	345	43.9
Type of Disease		
• Diabetes Mellitus	127	16.1
• Hypertensions	147	18.7

• Cardiac disorders	76	9.7
• Liver disorders	4	0.5
• Urinary disorders	14	1.7
• Auto-Immune disorders	9	1.1
• Neurological disorders	14	1.7
• Obesity	24	3.0
• Anxiety / psychological disorders	7	0.89
Others	48	6.0

Duration of stay in KSA

• <5 days	61	7.8
• 5-<14 days	101	12.9
• >14 days	623	79.2

Table 2: The frequency distribution of Prescription practice indicators among studied pilgrims

	F	%
Received drugs or/ prescriptions during haji season	553	70.4
The received medications Prescribed by (T= 553)		
Privet Doctor	261	47.2
• Campaign Doctor	191	34.5
• Self	93	11.9
• Friend	8	1.44
The aim of the used Medications (T= 553)		
• Preventive	166	(30.0)
• Management of Chronic disease	341(61.66)	43.44

	146(26.40)	18.1
<ul style="list-style-type: none"> Emergent health situation /transient 		
The route of the medication use (no= 553);		
<ul style="list-style-type: none"> Oral route 	470	90.6
<ul style="list-style-type: none"> Injection 	74	14.3
<ul style="list-style-type: none"> Rectal route 	5	0.9
<ul style="list-style-type: none"> Virginal route 	4	0.8
<ul style="list-style-type: none"> others 	11	2.1
Medication source (no= 553);		
<ul style="list-style-type: none"> Home town 	345	62.4
<ul style="list-style-type: none"> Campaigns 	197	35.6
<ul style="list-style-type: none"> Friends 	11	1.98
<ul style="list-style-type: none"> Saudi pharmacies 	29	5.24
The types of brought drugs from home town (no=345);		
<ul style="list-style-type: none"> For managing chronic diseases 	204	59.1
<ul style="list-style-type: none"> Pain killer 	275	79.7
<ul style="list-style-type: none"> Ant-pyritic 	134	38.8
<ul style="list-style-type: none"> Gastrointestinal 	77	22.3
<ul style="list-style-type: none"> Others 	5	1.4

45% of pilgrims often reported commitment to using the prescribed medications. Nearly 85% of them were dispensed with a sufficient amount of medications, and 20.3% complained of drug side effects mainly due to the unavailability of drugs.

Table 3: The frequency distribution of rational drug use among haji pilgrims using the modified WHO Standardized tool (International Network of Rational Use of Drugs)

(A) Prescription indicators	F	%
Number of drugs per prescription (T= 553);		
• One-two	285	51.5
• 3-4	192	34.5
• More than 4	76	13.7
Prescribed medication during haji (T= 553);		
• Antibiotics	248	44.85
• Heart medications	57	10.31
• Anti-Diabetic drugs	79	10.06
• Antifungal medications	19	3.44
• ant parasitic medications	2	0.36
• Gastrointestinal medications	44	7.96
• Anti-hypertensive drugs	69	12.77
• Others	35	6.32
Having written Prescription ((T= 553)	277	50.1
The written prescription under the personal name (T= 277)	202	(72.9)
The written prescription with the drug/s generic's name/s (277)	207	(74.7)
(B) Patient care indicators		
Average consultation time (min)	Mean+_Sd=16.4+_13.7 Median =10	Range (5-75)

Average dispensing time(min)	Mean+_Sd= 9.7+ _6.1 Median =6	Range (1-15)
Percentage of drugs adequately labeled	91.3+_21.9	Range (0-100)
Percentage of drugs actually dispensed	93.4+_22.9	Range (20-100)
Knowing the drug/s expired date/s (no= 553);		
• Do not know	138	24.5
• Do not care	31	5.6
• Knowing	384	69.4
Knowing the drug /s correct dosage (no= 553);		
• Do not know	62	11.2
• Do not care	33	5.96
• Knowing	458	82.8
C) Facility indicators:		
Accessibility of medication during Hajj (PHCCs-hospitals) (no=785)		
• Do not know	77	9.8
• Not accessible	429	77.5
• Accessible	88	11.2
• No need		
Knowing about the Saudi Food and Drug Authority (FDA) (no=785)		
	511	65.1

• Do not know	274	34.9
• Knowing		
The bought drugs had been checked (no=345);		
Yes	43	12.4
No	302	87.5

Table 4: The pattern of using, attitudes, and the side effects of prescribed medications

	F	%
Commitment to using the drugs as described (T= 553)		
• No/rare	68	12.3
• Sometimes	236	42.7
• Yes /often	249	45.0
A mount of dispensed drugs (T= 553)		
• Insufficient	85	15.4
• Sufficient	255	46.1
• More than sufficient	213	38.5
If the amount of the dispensed drugs had finished (553)		
• Didn't do anything	257	46.5
• Ask the campaign	181	32.7
• Buy it	66	11.9
• Others	49	8.9
If you didn't do anything, why (257)		
• The drugs in KSA is expensive	136	52.3
• The drugs don't available	71	27.6
• I didn't care	14	5.4
The drug side effects/complications		

(T=553)	111	20.3
• Yes	441	79.7
• No		
The causes of side effects/ complications (T=111)		
• The drug was not available		
• The alternative usage	93	83.7
• Wrong use	11	9.9
• Incompliance	4	0.4
• Others (the drug expensive –the medical staff didn't know my medication)	1	0.90
	8	7.2

Discussion

Since 1985, after the WHO Rational Use of Drugs conference, efforts increased to improve drug use practices. So, this study aimed to describes the drug use pattern and prescribing behavior among Hajj 1439 (2018) pilgrims from different countries that represent >80% of pilgrims and health facilities, that will allow health researchers, planners, and managers to compare between situations across years, to detect the health care provider's (HCPs) Performance problems, to improve the pilgrims' overall health status through promoting rational drug use and optimizing the use and effect of medications among pilgrims.

The religious haji rituals are physically demanding. Severe medical conditions should be exempted so that countries will consider their pilgrims' health status and physical ability; in this study, only 52, 9% of pilgrims medically examined pilgrims before haji.

The reported frequency of preventive drugs use was 30%; because Sudan and South Sudan considered African meningitis belt area so to children more than 12 years, and adult pilgrims The reported frequency of preventive drugs use was 30%; because Sudan and South Sudan considered African meningitis belt area so to children more than 12 years, and adult pilgrims excluding pregnant women ciprofloxacin, should be administrated at the port of entry to decrease the carrier rate.

74 (14.3%) of Hajj 1439 pilgrims use injection, which is comparable to the WHO standard value i.e., 13.4-24.1% (20), report from Chench 58 (9.7%), 62 (10.3%) in Arab Minch Hospital and 11.7 % in south West Ethiopia (11.07%). In Hawasa, referral hospital studies reported higher percentages (38.1%). These variations are explained by the difference in disease pattern distribution and level of care provided by professionals. Reducing the percentage of injections per encounter has an advantageous reduction in the risk of transmission of hepatitis, HIV, and other blood-borne infections.

Antibiotics were the main prescribed medications during haji 248 (44.85%), which is higher than the WHO standard value 20.0-26.8, that can be explained by variation in geographical location, disease distribution as the majority from the developing countries where the infectious disease is more prevalent which necessitates Antibiotic prescription. 207 (74.7%) of the written prescriptions contain the generic names of the drugs, which is significantly lower than studied in two hospitals and lower than the WHO guideline, which expects 100% of

drug prescriptions to be written in generic name. The generic prescription is considered an important indicator of prescribing quality and substantially reduces the drug cost and facilities cost, determining compliance level.

This study revealed that the majority (51.5%) of prescription contains from 1-2 drugs it could be due to variation in prescribers experience among physicians from different countries, similar to the WHO recommendation on rational drug use (1.6-1.8) drugs per encounter, and Hawassa referral hospital 1.9 drugs per encounter.

More than 80% of pilgrims know the drug/s correct dose, and 69.4 know the expired date/s and drugs dispensed, which is nearly consistent with Arab Minch Hospital 60% higher than what was reported in Chench Hospital 52%. This could be explained by many factors, including having insufficient time to get enough information, the level of education, trusting the medical service, cultural background, and being old, so having bad memory.

Ten and six mins were the median of the average consultation and dispensing duration in haji facilities, respectively. It has been considered a short duration and may be due to the large number of pilgrims patient flow which urged to be covered by the medical team (doctors and pharmacies), the crowded not well-prepared places and a small number of workforce. Inconsistent and larger than the conducted study in Ethiopia public hospital and South West of Ethiopia was (3.8, and 3.66 mins) and (6.14 and 1.28) respectively.

WHO defined adequate label prescriptions by containing at least the personal and drug name, duration/quantity, and dosage (dose and frequency) of the drug.

Out of the 70% of pilgrims who received medications, only 50% had written prescriptions. Due to the pilgrims' flow and lack of knowledge about the importance of writing prescriptions, they immediately provide drugs. Out of them, only (72.9%) were under the personal name, 74.7% were written with the drug's generic name, around 93% of the prescribed drugs were fully labeled, which is higher than Mulugeta, who reported only 67%. This may be due to inadequate labeling skills, which is considered a major factor for poor results.

In this study, The actually dispensed drugs percentage was 91.3%. In comparison, it was (45.7%) and (53.9%) respectively in studies conducted in Nigeria, Colombia, and North West Ethiopia (29,31,32,33) due to the availability of essential drugs, and the KSA good supply effort and management of drugs to ensure continuous drug supply and to prevent wastages and stock-outs.

Although around 52% and 11% of pilgrims had sufficient and more than sufficient respectively monthly Income. 52.3% Out of the 46.7% who reported an attitude of doing nothing if the drug amount finished because drugs in KSA are expensive that can be explained by exchange rates trading.

In this study, 20% from the 553 pilgrims who received medications suffering from drugs, this occurred due to many factors; 83.7% of the drug wasn't available, 9.9% from the use of the alternative drug. In addition to the percentage of poor pilgrims compliance for medications was 12.3%. Moreover, 15.4% reported that the amount of their drugs wasn't sufficient, 88% of used medications were under medical prescription, and only 50% had written prescription, around 25% of these prescriptions contained the generic name.

Limitation

Being a retrospective cross-sectional study, there might be recalled desirability and information bias. It's also not designed to reveal the factors determining rational drug use. There is a lack of agreement on such a method to describe the drug use pattern. The findings of this study should be interpreted in light of its limitations.

Strength

It is the first study conducted to assess the pattern of drug use among such mass gatherings. The sample size was large, randomly selected, and representative to more than 80% of pilgrims and gave an impression about different countries' range of drug use experiences. With the data collected by professional, well-trained doctors and the selected data, it is possible to get an

Conclusion

The drug use pattern is a prevalent and problematic issue among pilgrims due to many factors, e.g., the prescription was not adequately labeled, low average consultation, and dispensing time. The pilgrims' knowledge about the correct dose or expired data was average.

Recommendation

Further studies should be conducted to determine all factors that affect irrational drug use in different countries and situations. There is a crucial need for the cooperation of the MOH, the Food and Drug Institutions, and Ministry of Hajj to;

(1)Development of prescribing medication guidelines in haji education program, (2) Improve pilgrims' knowledge about the prescribed drugs and their context of use. (3) Train and improve the medical team's labeling and dispensing skills. (4) Train and Improve the drug supply and management to ensure the availability of key essential drugs list (EDL) on stocks.

This analysis and report will provide the policymakers with important information about the pattern of drug use and its determinants to optimize the drug use and decrease its related hazards for improving the overall health status among haji pilgrims.

Conflict of interest

No conflicts of interest

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List of abbreviations

FETP; Field Epidemiology Training Program

RUD; Rational Use of Drug.

KSA; Kingdom Saudi Arabia.

FDA; Food and Drug authority

ADR: Adverse Drug Reaction;

EDL: Essential Drug List;

WHO: World Health Organization

Sd: Standard Deviation

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