

Hospital Admission Due to Nephrological Conditions During Hajj Causes, Healthcare Use, and Short-term Outcomes

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In this retrospective study, records of Iranian Hajj pilgrims who were hospitalized in 2 Iranian hospitals in Mecca and Medina, Saudi Arabia, from 2005 to 2007, were reviewed. Of 600 patients who were hospitalized, 12 (2.0%) were admitted due to nephrological causes, which included kidney calculi ($n = 7$; 58.4%), acute kidney failure ($n = 2$; 16.7%), urinary tract infection ($n = 1$; 8.3%), urinary tract infection and urinary calculus ($n = 1$; 8.3%), and renal malignancy ($n = 1$; 8.3%). None of the patients needed referral to other healthcare centers, and all of them were discharged with good condition. Length of hospital stay was 1 to 4 days. There was no association between hospitalization due to nephrological causes and sociodemographic data, healthcare use, and outcome. This inpatient epidemiological study showed 2% of total admissions were related to nephrological conditions in Iranian Hajj pilgrims, most commonly due to easily treated conditions.

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Epidemiological studies focus on a single or a group of healthcare challenges. Hence, these studies are considered tools in the hands of healthcare planners.¹ Most of the inpatient epidemiological studies focus on causes, healthcare use, and outcomes,¹⁻³ and this is different from the studies being conducted in outpatient settings which mostly focus on the prevalence and risk factors. Inpatient epidemiological studies are considered of much importance, because, hospitalization is a costly endpoint of the disease spectrum, and most healthcare systems are trying to minimize inpatient care by shifting inpatient care to the less costly outpatient care. In-hospital data provides quite reliable knowledge regarding disease morbidity, as they are accurate and less subject to underdiagnosis and deficiencies of the surveillance systems in outpatient settings.^{4,5} As a general rule, data derived from hospitalization studies can be implemented for designing preventive interventions healthcare resource allocation.⁶

Healthcare and hospitalizations during Hajj ceremony is the concern of policy makers in Islamic nations. Annually, Muslims embark on the religious pilgrimage of Hajj to Mecca in Saudi

Arabia. The extreme congestion of people during this time amplifies health risks, such as those from infectious diseases, and several other conditions which may cause hospital admission.⁷⁻¹¹ Although some inpatient epidemiological studies have been conducted during Hajj,^{7,12-14} data is very limited regarding the nephrological conditions of admissions of pilgrims.^{15,16} In some of the previous studies of admitted Hajj patients, the exact proportion and cause of nephrological conditions were not clearly reported.^{7,12,13,15,17} All we know is that about 3% of the total admitted patients required urological care,¹² and that in intensive care units, 2.1% of admissions are due to acute kidney failure.⁷ We aimed to investigate the hospitalization of Iranian pilgrims during Hajj due to nephrological conditions, addressing causes, healthcare use, and short-term outcomes.

We retrospectively reviewed charts of 600 patients who were hospitalized in 2 Iranian hospitals in Mecca and Medina, Saudi Arabia between January 2005 and January 2007. Totally, the estimated number of Iranians participated in Hajj during these 2 years was 1 600 000. This study was performed in coordination with the Hajj and Pilgrimage Organization. Research

board of the Iranian Red Crescent Research Institute approved this study and fully funded it.

Data were collected and registered in checklists which covered the following: demographic characteristics, past medical history, cause of admission, healthcare use (route of admission, length of hospital stay, and the volume of paraclinical laboratory measures and physician visits), and inpatient outcome (discharged in a good condition, referred to a Saudi hospital, referred to hospitals of Iran, or death). The route of admission included admission from clinic or from emergency room.

The presenting illnesses were categorized using the World Health Organization categorization of diseases, namely ICD-10,¹⁸ after excluding disorders of the breast, inflammatory diseases of female pelvic organs, and noninflammatory disorders of female genital tract, diseases of male genital organs, and other disorders of genitourinary tract from diseases of the genitourinary system. We included glomerular diseases, renal tubulointerstitial diseases, renal failure, urolithiasis, other disorders of the kidney and ureters, and other diseases of the urinary tract system.

Of 600 patients who were hospitalized, 12 (2%) were admitted secondary to the nephrological causes. The mean age of the patients was 54.0 ± 19.0 years, and the length of hospital stay was between 1 and 4 days (median, 2 days). Seven patients (58.3%) were admitted for urinary calculus, 2 (16.7%) for kidney failure, 1 (8.3%) for urinary tract infection (UTI), 1 (8.3%) for concomitant UTI and urinary calculus, and 1 (8.3%) for renal malignancy. All of the patients were discharged with a stable condition, and none died, discharged against medical advice, or referred to another hospital, either in Saudi Arabia or Iran. Those admitted due to nephrological causes were not significantly different from those who had been admitted due to other causes, in terms of age, gender, previous medical history, outcome, and the length of hospital stay. The Table presents the sociodemographic data, clinical data, and healthcare use among these 12 patients.

Nephrological diseases consisted 2% of the total hospitalization caused of the Iranian pilgrims in Iranian hospitals in Saudi Arabia during Hajj. Within the nephrological causes, urinary calculi (66.7%) were the most frequent cause, following by acute kidney failure and UTI, each seen in 16.7% of these patients. The literature lacks enough

Demographic, Clinical, and Healthcare Records of Hajj Pilgrims Hospitalized for Nephrological Conditions

Characteristics	Patient (%)
Disease History	
Diabetes mellitus	1 (8.3)
Renal disease	5 (41.7)
Noncoronary heart disease	1 (8.3)
Respiratory disease	1 (8.3)
Hypertension	3 (25.0)
Coronary artery disease	2 (16.7)
Malignancies	1 (8.3)
Length of hospital stay	
1	3 (25.0)
2	5 (41.7)
3	3 (25.0)
4	1 (8.3)
Diagnosis	
Kidney calculus	7 (58.4)
Kidney failure	2 (16.7)
Urinary tract infection	1 (8.3)
Urinary tract infection and urinary calculus	1 (8.3)
Renal malignancy	1 (8.3)
Paraclinical tests	
Urine culture	0
Urinalysis	9 (75.0)
Ultrasonography	7 (58.4)
Arterial blood gas	0
Serum electrolytes	6 (50.0)
Serum creatinine	6 (50.0)
Complete blood count	7 (58.4)
Number of physician visits	
1	2 (16.7)
2	5 (41.7)
3	3 (25.0)
4 or more	2 (16.7)

information about the nephrological conditions needing inpatient care during Hajj. Most of published studies have focused on other causes of admissions or all hospitalizations in general.^{7,12,19,20} Unfortunately, review papers of the health risks of pilgrims have neglected nephrological conditions.¹¹

In our studied population, the more 75% of nephrological admissions were related to urinary calculus and UTI, which are both being considered as easily managed conditions, and do not need a care by a nephrological team. Both of these conditions can be treated by general physicians or internists at the hospital. The mean age of our patients was high (54 years), and a significant proportion had a somatic comorbidity. The age of the pilgrims and the high prevalence of comorbid conditions is an expected finding in pilgrims. According to the literature, 1 to 2 in each 4 pilgrims have somatic chronic conditions.^{7,20} The age of admitted patients is related to the high age of the pilgrims, because

most of Muslims participate in Hajj rituals in their late stages of life.^{7,20}

All of our patients were discharged in good condition, with no patient being transferred to receive tertiary care, being discharged against medical advice, or died. The reported inpatient deaths during Hajj ranged between 0.5% and 1.3%.^{7,17,21} However, other than deaths, some patients might be transferred to other secondary or tertiary care facilities or discharged against medical advice.^{20,22}

To conclude, nephrological conditions compose 2% of inpatient healthcare needs of Hajj pilgrims. The most common condition seems to be urinary calculus. Such conditions do not emergently depend on a special nephrological care, and can be managed by general physicians, and internists. This aspect of inpatient care, with excellent outcome, does not seem to need special interventions or health care programs.

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CONFLICT OF INTEREST

None declared.

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