



Treatment Camp and Patients in Arbaeen Pilgrimage in 2019



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Abstract

Introduction: One of the largest religious gatherings in the world is the Arbaeen pilgrimage, which takes place on the 40th day after the anniversary of the martyrdom of Imam Hussein, the third Shiite Imam. This study was aimed to investigate how to set up the Sahib-al-Zaman treatment camp on the Arbaeen walking route in 2019 and the patients referring to it.

Methods: This retrospective cross-sectional study was conducted on all patients referring to the Sahib-al-Zaman camp of Shiraz University of Medical Sciences, Shiraz, Iran in the Arbaeen Walking plan in 2019. In this study, how to set up camp was described. Patients' data and drugs used by the medical team were collected, and then were analyzed.

Results: Totally, 3477 patients were enrolled. The mean \pm SD of patients' age was 33.77 ± 16.19 (ranging from 1 to 96) years, and 2,183 patients (62.78%) were male. Most patients were Iranian (84.5%) and then Iraqi (13.66%), and only 1.84% were from other nationalities. Upper respiratory tract infection (60.2%), low back pain and muscle cramps (17.6%), and blister and need for dressing (12.3%) were the most common chief complaints in the patients. Adult cold pills, acetaminophen (325 mg), and cetirizine (10 mg) were the most commonly prescribed drugs for the patients.

Conclusion: Although the data used in this study are not sufficient due to the lack of a pre-created data recording system, the results of this study showed that in addition to the importance and necessity of holding such ceremonies, health issues and facilities should also be considered.

Keywords: Communicable Diseases, Health Policy, Noncommunicable Diseases, Public Health, Travel Medicine

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Introduction

According to the World Health Organization (WHO), any predetermined or spontaneous event that results in gathering a certain number of individuals in a specific area, for a specific purpose, at a specific time and leads to costs on resources and social programs is called a mass gathering. Expanding the interactions between communities and increasing the number of national and international events in communities have led to an increased number of public gatherings, which despite benefits such as cultural exchanges, have health challenges such as the transmission of infectious diseases; therefore, there is a need for health considerations in these events.¹

One of the challenges of large gatherings is the spread of infectious diseases and the participants' health needs, which puts a health burden on the host country. Even in areas with diverse health capacities and appropriate resources, public health systems are under severe pressure during gatherings.²⁻⁴

Various factors such as the gathering location, the number of participants, and the level of access to health centers, can affect the incidence of infectious diseases in large gatherings. Therefore, officials should pay special attention to these factors in planning.^{1,5-7} It is always possible to transmit infectious diseases due to the high population density at gatherings. Various studies on mass gatherings such as Hajj, the Ashura pilgrimage in Karbala, and Kumbh Mela and Sabarimala pilgrimage in India show the prevalence of infectious diseases in these ceremonies.⁸⁻¹³

One of the largest religious gatherings in the world is the Arbaeen pilgrimage, which takes place on the 40th day after the anniversary of the martyrdom of Imam Hussein, the third Shiite Imam. In the Arbaeen event, pilgrims walk from the city of Najaf to the city of Karbala, south of Baghdad. According to 2017 statistics, the number of Iranian pilgrims participating in the Arbaeen pilgrimage was 2320000. Iran and Iraq are

two neighboring countries. Pilgrims from several countries use Iran's land and air routes to reach Iraq and the Arbaeen ceremony.¹⁴

The construction of field hospitals and treatment camps during and after the gathering can be a good solution to health threats. Primary treatment of patients in these hospitals and camps is necessary and vital.¹⁵ On the other hand, in preparing and setting up these places, the efficiency of the plan should be examined by performing continuous exercises, and by preparing people's duties descriptions and understandable and straightforward instructions for relief and medical personnel, their confusion should be reduced, and necessary preparation should be made to deal with the main incidents. The Arbaeen walking due to uncontrollable population and pollution stemming from insufficient proper health facilities can cause an epidemic of various infections among the people, which in itself can be considered a crisis.^{15,16} On the other hand, few similar studies were carried on the needs and patients in large gatherings and ceremonies. As a result, knowledge of how to set up necessary facilities and equipment, as well as information about referring patients and their medical needs are the necessities that should be considered. Therefore, the present study investigated how to set up the Sahib-al-Zaman treatment camp by Shiraz University of Medical Sciences, Shiraz, Iran on the Arbaeen walking route in 2019 and the patients referring to it.

Methods

Study Design and Setting

This was a retrospective cross-sectional study, which was conducted on all patients referring to the Sahib-al-Zaman camp of Shiraz University of Medical Sciences, Shiraz, Iran in the Arbaeen Walking plan in 2019. Inclusion criteria included all patients referring to this treatment camp, and their data had been recorded in the triage office of this camp. Patients whose data had been incompletely recorded were excluded from the study.

Study Protocol

Patients' data such as age, gender, nationality, chief complaint, and systolic and diastolic blood pressure (SBP and DBP) were extracted from the triage office, which had been collected by the sent medical team. Drug information was collected from physicians' prescriptions visiting the patients of this camp. Face-to-face interviews were conducted with several physicians present in the camp to get acquainted with the treatment camp, its equipment and facilities, as well as its structure, and the results were reported descriptively.

Data Analysis

The SPSS software version 21.0 program (IBM Inc., Chicago, IL, USA) was used to determine the age distribution, gender, nationality, and the frequency of various complaints of referring patients and the used drugs. Frequency (percentage) was used to report qualitative data, and mean \pm standard deviation (SD) was used for quantitative ones. The independent sample *t* test and one-way analysis of variance (ANOVA) were used

to compare the means and chi-square test, and their non-parametric equivalents were used to compare the ratios. The significance level of 0.05 was considered.

Results

Setting up the Camp

The Sahib-al-Zaman Camp has been established aiming at accommodating and serving the pilgrims of Karbala, and the Sahib-al-Zaman treatment camp is considered the medical part of this camp. About 6 years have passed since the establishment of this procession. The camp is 11 000 meters wide and 10 meters from the Main Street, and 2300 meters from the holy shrine (Figure 1). The capacity of the camp is 4000 people (2000 men and 2000 women). Each person was allowed to stay in this camp for 3 days. Arrivals and departures were recorded at the pilgrims' resting place entrance based on the national ID number and the passport barcode. Each pilgrim was given an entry card after recording the arrival at the procession. Most of the ground in the camp area was covered with soft soil. The main door of the camp had two entrances: (1) the entrance related to the pilgrims' resting place, and (2) the entrance of the clinic and the personnel's tents.

The camp included 8 bathrooms, 8 washbowls, and 8 water closets for men to use. There were also 6 baths and washbowls and 6 water closets for women to use and 3 baths and 4 washbowls for the use of male servants and physicians. The camp tents included general tents, clinic, Hosseinyeh, kitchen, and servants' tent (23 tents for men and 5 tents for women).

After entering the gate from the right side, there were two Hosseinyeh with an area of 20 meters by 20 meters for men and women. The largest men's resting place was 20 by 30 meters, made of tarpaulin and metal scaffolding. The female servants' residence was also a land with an area of 20 by 30 meters consisting of 5 tents for rest.

Three tents with an area of 12 by 16 meters were prepared for physicians to rest. Also, 5 tents were prepared for female servants that were used for the following purposes: Cultural group (Hosseinyeh, children's booth, circles of knowledge, answering to religious issues, questions and answers of short circles, speeches, and eulogies), cleaning staff, and accommodation servants.

Clinic

The clinic entrance was on the right side of the procession. The clinic consisted of 7 parts: Triage, men's physician, women's physician, women's hospitalization, women's injections, men's hospitalization, men's injections, and dentistry. The clinic was open from 8 am to 12 pm (two 8-hour shifts). In each shift, service was provided by 2 physicians and 6 nurses (2 for women's injections, 2 for men's injections, and 2 for triage).

Pharmacy

The pharmacy room was located on the right of the clinic entrance hall. The pharmacy was open from 8 am to 12 pm (two 8-hour shifts). The pharmacy staff consisted of 6 people, and in each shift, the service was provided by 3 people. Next

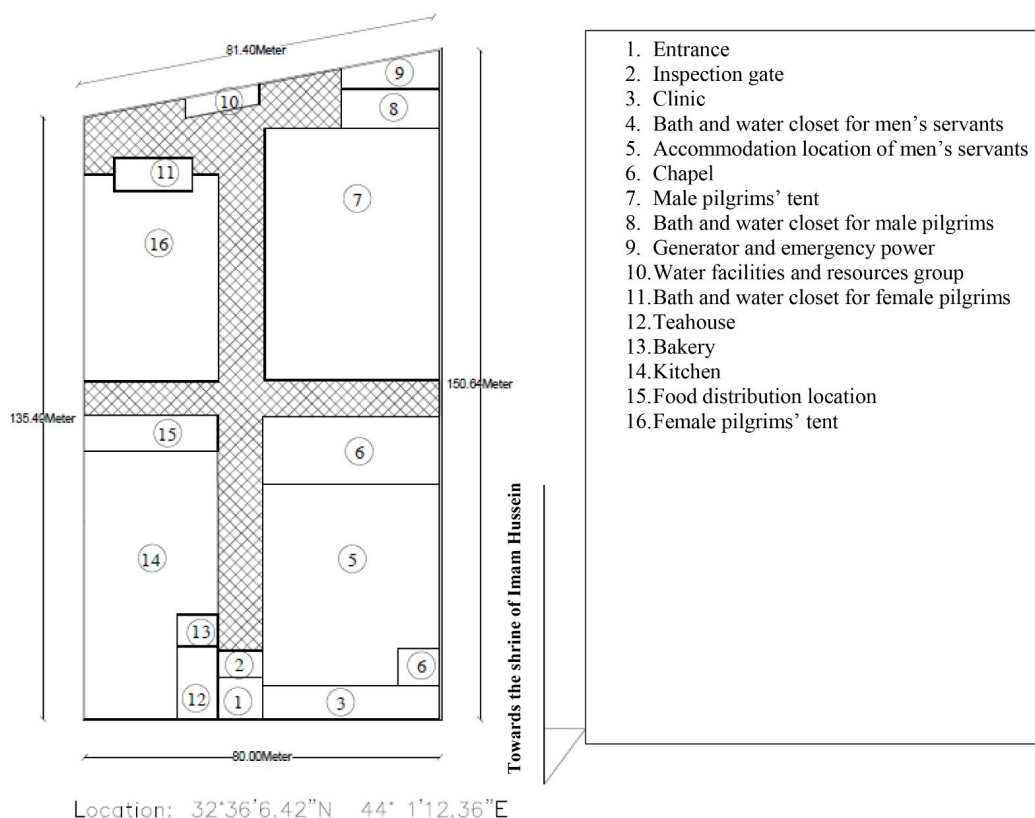


Figure 1. The Map of Sahib-al-Zaman Camp in Arbaeen Pilgrimage in 2019

to the pharmacy, there was an outpatient operating room and a medicine storage container.

Kitchen and Bakery

The kitchen consisted of 30 personnel in two shifts of 15 people, who were busy cooking 24 hours a day. There were 11 stoves, 50-kg natural gas capsules, fifteen 33-kg brass pots, 15 stew pots, and 7 refrigerators and freezers in the kitchen. In the camp kitchen, food was cooked daily for an average of 2000 people, which in the days close to Arbaeen, this number reached 3000-4000 people. On average, thirteen 50-kg capsules were used daily in the kitchen. Kitchen personnel sometimes suffered burns and gas poisoning.

A bakery had been established on the left side of the main entrance of the pilgrims' resting place with an area of approximately 35 square meters. The bakery prepared and distributed 5000 loaves of white Lavash bread daily with automatic and semi-automatic machines. There were two work shifts in the bakery (4-8 am and 4-7 pm), with 5 people working on each shift.

There was a free area in front of the bakery where an L-shaped two-part row was created by scaffolding and gunny to distribute food to pilgrims. At the bottom of the space, there was a food storage container in which food was stored with a refrigerator and a cooler for cooling. Next to the food storage container, there was a place to store a variety of disposable utensils and blankets.

Pantry

The camp pantry was located on the left side of the main

entrance. Eight hundred disposable glasses, 40 kg sugar cubes, and 100 kg sugar were used daily to prepare and distribute various drinks (hot water, lemon juice, tea, thyme herbal tea, mint syrup, rose water syrup, and lemon syrup). Twenty ice cubes were consumed daily.

Other Facilities

The usual electricity of the camp was supported from the urban electricity. A temporary power generator was installed to supply power during a power outage. The camp was funded by servants, public aid, donors, getting a loan, and camp officials. The annual budget required for this camp is 800-900 million Tomans. This camp had 40 water closets and baths. A 30000-L water tank with 5 pumps and two water purifiers was used to support the camp water. The daily consumption of non-drinking water was 1000 L, and that of drinking water was 3000 L. Drinking and non-drinking water was supplied from neighboring houses. There were also 2 dryers, 2 laundries, 2 water heaters, 4 containers (the food, medicine, and rice warehouse), and 4 connexes (the resting place of men's and women's servants, pharmacy, operating room). Next to the pantry, a place was considered for repairing bags and shoes; 10-15 shoes and 10-15 bags were repaired daily.

Patients Referring to the Camp

Totally, 3477 patients were enrolled. The mean \pm SD of patients' age was 33.77 ± 16.19 (ranging from 1 to 96) years, and 2183 patients (62.78%) were male. As was shown in Table 1, the mean \pm SD of the age of men was 37.10 ± 16.47 years, which was significantly lower than the women (38.91 ± 15.64)

years ($P=0.002$). Most patients were Iranian (84.5%) and then Iraqi (13.66%), and only 1.84% were from other nationalities. The different frequency distribution of age groups and nationality based on gender was also statistically significant ($P<0.001$). The results also showed that the mean SBP and DBP were significantly higher in men ($P<0.001$). Also, there was a linear and direct relationship between age and SBP ($r=0.300$, $P<0.001$), as well as DBP ($r=0.167$, $P=0.001$).

Table 2 shows the frequency distribution of patients' demographic variables by age group. The highest frequency percentage of male patients was in the age group of <26 years (64.83%) and among female patients in the age group of 36-50 years (42.02%). This difference was statistically significant ($P<0.001$). In all age groups, the percentage of Iranian nationality was significantly higher than in others.

Table 3 shows the frequency distribution of patients' chief complaints in general and by gender. Upper respiratory tract infection (60.2%), low back pain and muscle cramps (17.6%), and blister and need for dressing (12.3%) were the most common chief complaints in the patients. There was a statistically significant difference in the frequency of blisters and the need for dressing, gastrointestinal problems, heart problems, the need for injection, dizziness, urological problems, low back pain, muscle cramps, upper respiratory infections and colds, fever, and the need for dental services

between men and women ($P<0.05$). However, the frequency of heatstroke, skin problems, a history of diabetes, eye/ear/throat/nose problems, a history of blood pressure, and other problems between men and women were not statistically significant ($P>0.05$).

The frequency of blisters and the need for dressing, gastrointestinal problems, heart problems, dizziness, low back pain, muscle cramps, upper respiratory infections, skin problems, a history of diabetes, and the need for dental services among the age groups were statistically different ($P<0.05$) (Table 4).

Drugs Used

As was shown in Table 5, the most commonly prescribed tablet among the patients were adult cold pills, acetaminophen (325 mg), and cetirizine (10 mg). These three drugs were also the most prescribed drugs for patients. The most prescribed capsules were amoxicillin (500 mg) and Novafen. Most injections were ketorolac, B-complex, and dexamethasone. The most commonly prescribed syrups were diphenhydramine, expectorant, and dextromethorphan, respectively. The only spray prescribed was salbutamol. Acetaminophen and diclofenac suppositories were the most widely used suppositories. Also, the most commonly prescribed ointments among patients were piroxicam and

Table 1. Patients' Demographic Characteristics and Blood Pressure of in General and by Gender

Variables	Total (N=3477)	Male (n=2183)	Female (n=1294)	P Value
Age (y) (mean \pm SD)	37.77 \pm 16.19	37.10 \pm 16.47	38.91 \pm 15.64	0.002 ^a
Age group (%)				<0.001 ^{ab}
>26	856 (24.61)	585 (26.80)	271 (20.94)	
26-36	816 (24.61)	529 (24.23)	287 (22.18)	
36-50	752 (21.63)	436 (19.97)	316 (24.42)	
50 \leq	1002 (28.82)	602 (27.58)	400 (30.91)	
Not determined	51 (1.47)	31 (1.42)	20 (1.55)	
Nationality (%)				<0.001 ^{ab}
Iranian	2938 (84.5)	1732 (79.34)	1206 (93.20)	
Iraqi	475 (13.66)	409 (18.74)	66 (5.10)	
Other	64 (1.84)	42 (1.92)	22 (1.70)	
SBP (mm Hg) (mean \pm SD)	116.55 \pm 19.70	121.16 \pm 18.54	111.84 \pm 19.77	<0.001 ^{ab}
DBP (mm Hg) (mean \pm SD)	73.25 \pm 11.87	75.52 \pm 11.09	70.92 \pm 12.22	<0.001 ^{ab}

SD, standard deviation; SBP, systolic blood pressure; DBP, diastolic blood pressure.

^a Independent sample *t* test; ^b Chi-square test.

* Statistically significant.

Table 2. Patients' Demographic Characteristics and Blood Pressure According to Age Groups

Variables	>26 Years (n=856)	26-36 Years (n=816)	36-50 Years (n=752)	\geq 50 Years (n=1002)	P Value ^a
Nationality (%)					<0.001*
Male	585 (68.34)	529 (64.83)	436 (57.98)	602 (60.08)	
Female	271 (31.66)	287 (35.17)	316 (42.02)	400 (39.92)	
Nationality (%)					<0.001*
Iranian	619 (72.31)	704 (86.27)	684 (90.96)	909 (90.72)	
Iraqi	227 (26.52)	105 (12.87)	64 (8.51)	72 (7.19)	
Other	10 (1.17)	7 (0.86)	4 (0.53)	21 (2.1)	

* Statistically significant; ^aChi-square test.

Table 3. Patients' Chief Complaint According to Age Groups

Variables	Total (N = 3477)	Male (n = 2183)	Female (n = 1294)	P Value ^a
Upper respiratory tract infection (%)	2055 (60.2)	1220 (56.9)	835 (65.92)	<0.001*
Low back pain and muscle cramps (%)	601 (17.6)	341 (15.9)	260 (20.09)	0.001*
Blisters and need for dressing (%)	420 (12.3)	298 (13.9)	122 (9.43)	<0.001*
Digestive problems	258 (7.6)	143 (6.7)	115 (8.89)	0.011*
Injections (%)	181 (5.3)	171 (8.0)	10 (0.77)	<0.001*
Fever (%)	75 (2.2)	36 (1.6)	39 (3.01)	0.007*
Cardiac problems (%)	75 (9.6)	38 (1.8)	37 (2.86)	0.028
Dentistry services (%)	68 (2.0)	57 (2.6)	11 (0.85)	<0.001*
Heatstroke (%)	51 (1.5)	31 (1.4)	20 (1.55)	0.75
Urological problems (%)	43 (1.2)	18 (0.8)	25 (1.93)	0.004*
Skin problems (%)	43 (1.2)	25 (1.1)	18 (1.39)	0.51
Hypertension (%)	28 (0.8)	15 (0.7)	13 (1.0)	0.3
Dizziness (%)	24 (0.7)	9 (0.4)	15 (1.2)	0.01*
Eyes, ears, throat and nose (%)	23 (0.7)	10 (0.5)	13 (1.0)	0.053
Diabetic problems (%)	18 (0.5)	12 (0.5)	6 (0.46)	0.74
Women's problems (%)	10 (0.29)	0 (0)	10 (0.77)	-
Other problems (%)	218 (6.3)	133 (6.1)	85 (6.57)	0.54

* Statistically significant; ^a Chi-square test.

Table 4. Patients' Chief Complaint According to Age Groups

Variables	> 26 Years (n = 856)	26-36 Years (n = 816)	36-50 Years (n = 752)	≥ 50 Years (n = 1002)	P Value ^a
Upper respiratory tract infection (%)	544 (63.55)	530 (64.95)	445 (59.18)	523 (52.20)	<0.001*
Low back pain and muscle cramps (%)	82 (9.58)	136 (16.67)	141 (18.75)	238 (23.75)	<0.001*
Blisters and need for dressing (%)	71 (8.29)	111 (13.60)	96 (12.76)	131 (13.07)	0.01*
Digestive problems	79 (9.23)	46 (5.64)	77 (10.24)	55 (5.49)	<0.001*
Injections (%)	34 (3.15)	56 (6.86)	35 (4.65)	52 (5.19)	0.054
Fever (%)	27 (3.15)	13 (1.59)	18 (2.39)	17 (1.70)	0.097
Cardiac problems (%)	3 (0.35)	5 (0.61)	14 (1.86)	51 (5.09)	<0.001*
Dentistry services (%)	25 (2.92)	15 (1.84)	18 (2.39)	8 (0.8)	0.007*
Heatstroke (%)	12 (1.40)	11 (1.35)	10 (1.33)	15 (1.5)	0.99
Urological problems (%)	11 (1.29)	5 (0.61)	11 (1.46)	16 (1.6)	0.26
Skin problems (%)	16 (1.87)	8 (0.8)	0 (0)	18 (1.8)	0.002*
Hypertension (%)	1 (0.12)	2 (0.25)	7 (0.93)	18 (1.8)	<0.001*
Dizziness (%)	2 (2.32)	2 (0.25)	7 (0.93)	13 (1.3)	0.013*
Eyes, ears, throat and nose (%)	9 (1.05)	6 (0.75)	6 (0.8)	2 (0.2)	0.14
Diabetic problems (%)	1 (0.12)	1 (0.12)	3 (0.4)	12 (1.2)	0.002*
Women's problems (%)	1 (0.12)	4 (0.49)	3 (0.4)	2 (0.2)	0.41
Other problems (%)	53 (6.19)	44 (5.39)	48 (6.38)	73 (7.27)	0.41

* Statistically significant; ^a Chi-square test.

zinc oxide. Moreover, the most commonly prescribed drops were normal saline drops. Finally, the highest injected serum was also normal saline serum.

Discussion

Among the health challenges in large gatherings, including the Arbaeen walking, are the spread of infectious diseases and the health needs of the participants. An excellent way to provide health facilities and reduce these threats is to establish field hospitals and treatment camps during and after the gathering.

The role of these hospitals and treatment camps in primary treatments and prevention of human catastrophes is vital.^{15,17} Despite the various treatment camps along the Arbaeen walking route, accurate epidemiological information on the number of patients, drugs used, common diseases, etc, are not available. Therefore, this study was conducted to evaluate the patients referring to the Sahib-al-Zaman treatment camp of Shiraz University of Medical Sciences in the Arbaeen walking plan in 2019.

In this study, 3477 patients were investigated that their

Table 5. The Most Commonly Prescribed Tablet Among the PATIENTS

Serum		Droplet		Ointment		Suppository		Spray		Syrup		Ampulla		Capsule		Tablet					
Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number	Drug Name (Dose)	Number				
Normal saline	23	Normal saline	155	Piroxicam	13	Acetaminophen	21	Salbutamol	409	Diphenhydramine	135	Ketorolac	153	Amoxicillin (250 mg)	5	Dicyclomine (10 mg)	23	Hyosin (10 mg)	1230	Adalat Cold	
Water dextrose 5%	21	Artificial tear	66	Zinc oxide	11	Diclofenac			194	Expectorant	115	B complex	142	Novaten	4	Folic acid (1 mg)	21	Propranolol (40 mg)	581	Acetaminophen (325 mg)	
Ringer lactate	9	Ocular betamethasone	59	Diclofenac	5	Bizacodyl			93	Dextromethorphan	104	Dexamethasone	35	Omeprazole (40 mg)	3	LD Contraceptive	19	Aladine	361	Citrizin (10 mg)	
	7	Phenylephrine	40	Triamcinolone NN	1	Glycerin			40	Broufen	65	Diclofenac	21	Cabapentin (100 mg)	3	Chloridiazepoxide (5 mg)	18	Metocarbamol (500 mg)	129	Diclofenac (50 mg)	
	3	Sulfastamide	34	Clotrimazole					39	Pediatric colds	31	Ondansetron	16	Cephalexin (500 mg)	2	Erythromycin (500 mg)	16	Bisacodyl (5 mg)	126	Brophene (400 mg)	
	2	Nafazoline	30	Vitamin AD					23	Aluminum MGS	31	Hydrocortisone	16	Loperamide (2 mg)	2	Aldactone	16	Dimethicone (40 mg)	93	Ranitidine (150 mg)	
	1	Gentamicin	21	Betamethasone					22	MOM	24	Piroxicam	14	Celecoxib (100 mg)	2	Cotrimoxazole	16	Metformin (500 mg)	71	Vitamin C.	
	1	Pseudoephedrine	20	Hydrocortisone					17	Amoxicillin	24	Hyoscine	7	Meftamic acid (250 mg)	2	Clindium C.	14	Antihistamine	58	Azithromycin (250 mg)	
	1	Ciprofloxacin	15	Tetracycline					12	Theophylline G	17	Chlorphenylamine	4	Fluconazole (200 mg)	1	Bethahistine (8 mg)	14	Baclofen (25 mg)	57	Metoclopramide (10 mg)	
	15	Calendula							11	Acetaminophen	12	Neurobin	3	Piroxicam (10 mg)	1	Bromhexine (8 mg)	13	Sylax	50	Gelofen (400 mg)	
	14	Mepirosine							7	Hydroxyzine	11	Ceftriaxone			1	B complex	12	Atorvastatin (40 mg)	37	Ondansetron (4 mg)	
	12	Anti hemorrhoids							4	Salbutamol	100	Penicillin			1	TNG	9	Loratadine (10 mg)	36	Coamoxyclav (625 mg)	
	7	Methyl salicylate							4	Guafenesin	6	Lidocaine			1	Dextromethorphan	9	Metoral (50 mg)	35	Metronidazole (250 mg)	
	4	Acyclovir							3	Ketotifen	4	Metoclopramide			1	Phenazopyridine (100 mg)	8	Cefexime (400 mg)	30	Ciprofloxacin (500 mg)	
	4	Kalamini							2	Azithromycin	1	Apotel			1	Nitrofrantoid (100 mg)	8	Captopril (25 mg)	26	Diphenoxylate (2.5 mg)	
	3	Rosemary							2	Ondansetron	1	Diazepam			7	Amylodiprine (5 mg)	7	Zinc Plus	26	Zinc Plus	
	3	Vicks							2	CO-Amoxiclav					6	Diazepam (10 mg)	6	Losartan (25 mg)	26	Losartan (25 mg)	
	1	Tamsulosin							1	Bromhexine					6	Dimenhydrinate (50 mg)	6	ASA	25	ASA	
	1	Pseudoephedrine							1	Pseudoephedrine											

mean age was 33.77 ± 6.19 years and 62.8% were male. The highest frequency of male patients was in the age group of < 26 years, and among female patients was in the age group of 36-50 years. This result is consistent with the findings of Joseph and colleagues' study, which showed the higher participation of men than women in the Sabarimala walking in India.⁹ Bakhsh et al also reported higher participation of men in Hajj in 2013.¹⁸ Findings from a study by Taher et al, who randomly selected 3,500 people participating in the Arbaeen walking in 2017, indicated the participation of men more than women, which is consistent with the results of our study.¹⁹ In Lami and colleagues' study, also, it was found that among the patients referring to 152 public medical centers in the Arbaeen of 2020, the number of men was more than women.²⁰ Moreover, similar results were obtained in Al-Ansari and colleagues' study in 2021.¹⁴ The higher number of referring men in this study can be attributed to the greater presence of men in such gatherings; therefore, more men individuals will need medical services.

The most common medical chief complaint of patients in the present study were upper respiratory tract infection (60.2%). The most commonly prescribed medications were also appropriate for this complaint, including adult cold tablet, acetaminophen (325 mg), and cetirizine (10 mg). In a study on 4,710 people in a tsunami refugee camp, Lim et al reported a high prevalence of respiratory problems.²¹ The results of Bakhsh and colleagues' study during the 2013 Hajj ceremony showed that the majority of patients referring to medical centers suffered from respiratory infections.¹⁸ In confirmation of the obtained findings, the results of Memish and colleagues' study showed that almost all pilgrims developed respiratory tract infections during Hajj, known as pilgrims' cough.⁸ Similarly, in the field hospital established in the earthquake-ravaged areas of Kermanshah in 2018, the highest number of complaints from individuals referred was related to respiratory tract infections.¹⁵ Al-Ansari and colleagues' study on 1842 participants in the Arbaeen walking showed that 25.6% of participants had a cough,¹⁴ which is consistent with the present study. A systematic review of 31 studies on the prevalence of respiratory viruses during Hajj showed that influenza, rhinovirus, and parainfluenza were still the most common viral infections among pilgrims.²² Given the nature of such gatherings, respiratory tract infections can be justified, and such complaints are expected, which have been mentioned in various studies and various gatherings and walkings around the world. Respiratory diseases, including the flu and long-term asthma-like colds, the main cause of which can be attributed to the climatic conditions of the region, the occurrence of haze, and also the contagion of respiratory infections in this public gathering, are the most important challenges these programs, for which appropriate equipment, medication, and medical services should be planned.

In the present study, low back pain and muscle cramps, blisters and the need for dressing, gastrointestinal diseases, fever, and skin diseases were other complaints of patients. Al-Lami et al reported a seven-fold increase in the number of individuals with fever during gathering people in Karbala

on the day of Ashura.¹⁰ In another study, after examining infectious diseases related to the travel of 1,586 travelers to Brazil at FIFA 2014 and the 2014 Summer Olympics, Wilson et al reported the infection of 40% of travelers with skin problems and 25% with diarrhea syndrome.²³ Farahmand et al also reported the third most common chief complaint in patients referring to the field hospital set up in the earthquake-ravaged areas of Kermanshah in 2018 as gastrointestinal problems.¹⁵ In Al-Ansari and colleagues' study, diarrhea was reported in 12.6% of patients in Arbaeen 2017.¹⁴ The main causes of gastrointestinal complications include intestinal problems and food poisoning, which can be attributed to the lack of proper health services and lack of personal hygiene observance along the way, as well as the lack of food disinfection.^{14,15} However, musculoskeletal complaints can be due to the long walking route and the use of inappropriate shoes, as well as skin complications due to insect bites and long walking in the sun.²⁴

Being single-center and lack of follow-up of patients are among the limitations of the present study. It is suggested that more comprehensive studies be performed on patients referring to different treatment camps in the future. Also, referring patients should be followed up and examined after returning from the gathering. Designing and setting up patient data recording systems can be helpful in this regard.

Conclusion

Upper respiratory infections, low back pain, muscle cramps, blisters, and the need for dressing were the most common medical complaints in the patients. Adult cold pills, acetaminophen (325 mg), and cetirizine (10 mg) were the most commonly prescribed drugs for the patients. Although the data used in this study are not sufficient due to the lack of a pre-created data recording system, the results of this study showed that in addition to the importance and necessity of holding such ceremonies, health issues and facilities should also be considered. Also, equipment, facilities, and specialized personnel should be provided on-site considering needs assessments and studies performed.

Author' Contributions

Concept and design: FF and RSM. Carried out the studies: FF, FH, RSM, HS, SRH, and LM. Statistical analysis: FH and RSM. Writing original draft preparation: FF, FH, RSM. Writing review and editing: All authors.

Conflict of Interest Disclosures

The authors have no conflict of interest in this study.

Ethical Approval

The current study was conducted in accordance with the Declaration of Helsinki, and it was approved by Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.MED.REC.1399.161). To consider the ethical issue, the collected data were not revealed to anyone, except for the researchers; hence, patients' names were kept confidential.

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Research Highlights

What Is Already Known?

- One of the challenges of large gatherings is the spread of infectious diseases and the participants' health needs.
- One of the largest religious gatherings in the world is the Arbaeen pilgrimage, which takes place on the 40th day after the anniversary of the martyrdom of Imam Hussein, the third Shiite Imam.
- Few similar studies were carried on the needs and patients in large gatherings and ceremonies

What Does This Study Add?

- Upper respiratory infections, low back pain, muscle cramps, blisters, and the need for dressing were the most common medical complaints in the patients.
- Adult cold pills, acetaminophen (325 mg), and cetirizine (10 mg) were the most commonly prescribed drugs for the patients.
- Although the data used in this study are not sufficient due to the lack of a pre-created data recording system.
- In addition to the importance and necessity of holding such ceremonies, health issues and facilities should also be considered.

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