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Acute Watery Diarrhea Cases During Cholera Outbreak in Syria: A Cohort Study

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Abstract

Objectives: The aim of this study is a descriptive presentation of cases of acute watery diarrhea (AWD) that were presented to Aleppo University Hospital during the recent cholera outbreak in Syria.

Design: Prospective, observational, cohort, study.

Setting and Participants: A total of 1061 AWD patients were admitted to Aleppo University Hospital during the timeframe of September 20th, 2022, to October 20th, 2022, with a notable gender distribution showcasing 46.5% as males. The majority were in the middle-age category (30-60 years) and early childhood (<2 years). The data collection was done through a structured questionnaire. This includes comprehensive clinical observation, laboratory analyses, therapeutic interventions, and holistic case evaluations

Results: The analysis has revealed notable insights; A predominant proportion of patients (58.6%) were residents from urban areas, and (40.3%) were residents from rural areas. Intriguingly, a diverse range of potential infection sources emerged from patient data within our hospital, including uncontrolled well water, vegetables (notably parsley and mint, which might have irrigated with contaminated water), and fecal-oral transmission through contaminated street/fast food, particularly those integrated vegetables. Intravenous rehydration was necessitated for a substantial majority (77.7%) of patients, with Lactated Ringer and Isotonic sodium chloride solutions being administered to 33.4% and 23.6% of patients, respectively. Furthermore, 65.7% of patients received oral rehydration salts (ORS). Regarding antibiotics, Doxycycline and Ciprofloxacin were prescribed in most cases (61%). 79.8% of patients were discharged in a state of good health, although post-discharge follow-up revealed maintenance of health in only 61.9% of cases. Regrettably, four patients died (0.4%).

Conclusions: This study reached descriptive results similar to studies in previous AWD outbreaks in developing countries such as Yemen, Nigeria, and Lebanon. Therefore, future studies must investigate the risk factors that increase the spread and the severity of the disease and investigate the best management method.

Strengths and limitations

- This study conducted at Aleppo University Hospital in Syria provides a comprehensive analysis of AWD cases following the declaration of a cholera outbreak.
- The research, which was non-interventional and based solely on observation, included all patients with AWD, regardless of age or whether they were admitted to the hospital or discharged on the same day.
- The study offers detailed management and clinical assessment data, as well as a two-week post-discharge follow-up.
- As the key medical institution in the city where the first cholera case was identified, this research stands as a crucial resource for understanding and addressing the ongoing outbreak.

1. Introduction

Acute Watery Diarrhea (AWD) is a condition that lasts less than 14 days due to an enterotoxigenic bacteria or viral infection in the gastrointestinal system. The bacterial causes of AWD are many, including Vibrio cholera, Shigella, Salmonella, E Coli, or Campylobacter infection.

Usually, AWD outbreaks are critical challenges to all healthcare systems because of the rapid manifestation and idiopathic source of infection. Besides, most reported cases are distributed in areas where numerous potential sources of infection are found, such as unclean drinking water, insufficiency of water filtration infrastructures, animal exposure, and sewage-contaminated food and drinks. Moreover, these outbreaks differ between countries, depending on healthcare systems and response to emergencies, sanitation of food and water facilities, and population awareness of common infectious diseases. Notably, many countries that used to have low rates of AWD have recently been outbreak locations with new high records. Nearly 70,106 AWD reported cases in only three MENA (Middle East and North Africa) countries so far, according to the WHO's latest December 2022 reports. [1–3]

One of the most suspected and proven causes of AWD cases is Cholera: a waterborne intestinal infection that transmits through the fecal-oral route. To date, cholera remains a global health threat with high morbidity and mortality. Although cholera is easy to treat, delaying rehydration can make it a serious and life-threatening disease as it can cause volume depletion within a few hours. While many countries in the developed world have succeeded in completely eradicating cholera decades ago, cholera still has occasional outbreaks in low- and middle-income countries from time to time. In late 2022, Cholera caused many outbreaks in the Eastern Mediterranean region. Iraq, for instance, confirmed 3,063 cholera cases and 19 deaths, while Lebanon announced 5,372 confirmed and suspected cholera cases with 23 deaths.[1,2] Unfortunately, after nearly 20 years since the last cholera outbreak in Syria, cholera also returned in late 2022 to spread widely in the country, posing a challenge to the health system in the Syrian Arab Republic. [3]

By 10 December 2022 Syria reported 61,671 suspected and confirmed cholera cases, besides 100 deaths among its 14 governorates until 10 December. It all started on 10 September 2022, when the Ministry of Health (MoH) declared a cholera outbreak in Aleppo Governorate. After that date, other governorates enhanced the reporting of AWD cases / cholera-suspected cases, and the numbers of most affected were as follows; 20,103 in Deir Ez-Zor, 14,142 in Idleb, 12,818 in Raqqa, and 11,617 in Aleppo, according to the WHO and the Syrian MoH reports. The reports also stated a case fatality rate of 0.2% and an overall cholera positivity of 46%. [3]

In response, the relevant health authorities, implemented a series of procedures to control the outbreak, including enhancing the surveillance, AWD reporting, Lab support, case management refreshment,

providing hydration kits, and setting oral rehydration points. on the other hand, monitoring water quality and ensuring a safe chlorination rates at water pumping stations and at end user water point to ensured safer water access. Rigorous validation of food and well water sources, particularly in high-incidence areas, contributed to source control. Community awareness initiatives were undertaken to promote prevention and encourage reporting of potential cases.

This study aims to report AWD cases in Aleppo University Hospital (AUH), Aleppo Governorate, during the outbreak -between 20 September and 20 October- and assess the response quality and outcomes in patients and the hospital healthcare system within 30-days of reporting the cases.

2. Methods

2.1. Study design and Participants

AWD cases study in Syria is a localized, longitudinal study involving people of all ages. We conducted This prospective cohort profile study to enhance our understanding of AWD and to collect a voluminous and superior-quality dataset concerning the condition. Patients were admitted to Aleppo university hospital between 20th September 2022 and 20th October 2022. The process was initiated following a request for verbal informed consent by physicians prior to the administration of the questionnaire, and in accordance to Strengthening the reporting of observational studies in epidemiology (STROBE) statement. [4]

2.2. Ethical approval

The study was approved by the Aleppo university hospital. The data used in this study were completely anonymized before the authors had access to them. Moreover, this study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments, and under ethical approval from the ethics committee at the Faculty of Medicine, University of Aleppo, Syria.

2.3. Bias

The dean of the faculty of medicine, the head of the Department of Internal Medicine, the head of the Department of Pediatric Medicine, and the general director of Aleppo University Hospital Performed the overall review and validation of the project. The medical staff also participated in the research work. Investigators performed fieldwork; interviewers (in charge of the interview and filling out the data) and doctors (responsible for health assessment). We spare no effort to ensure that all data was registered accurately.

2.4. Data collection and Variables

The patients were interviewed through a structured questionnaire to gather the patients' characteristics, including demographics (i.e., age, gender, place of residence), admission details (e.g., dehydration and loss of fluid, stool description.), comorbidities, and previous medications.

Clinical examination and patients' history data were also recorded, such as measuring blood pressure and heart rate and taking clinical symptoms such as diarrhea, nausea and vomiting, fever, and others. Moreover, we recorded cholera details, including diagnosis, laboratory findings, rehydration, management, and follow-up.

The questionnaire was designed according to the international standards. All laboratory analyses were conducted by the central laboratory at Aleppo university hospital, such as count blood cells, and Blood biochemistry (Blood glucose, Serum creatinine, Urea, k+, Na+).

The Patients were also categorized into five grades based on their health status using the American Society of Anaesthesiologists physical status classification [5]. Habits, including smoking and alcohol

consumption, were evaluated using WHO's Smoking and Tobacco Use Policy which classifies patients into four categories: A daily smoker, who smokes any tobacco product at least once a day, an occasional smoker, who smokes, but not every day, a former smoker and a never smoker. [6]

The age of the patients was divided into several age groups.

The patients were evaluated, and their data was recorded during the hospital stay and two weeks after their discharge, and if their condition did not improve after two weeks, they were followed up for 30 days.

The patients were evaluated at discharge and two weeks later and classified into several health categories: Good health: the patient no longer has any symptoms or mild symptoms from the convalescent stage. Moderate Health: the patient is still suffering from the symptoms of the disease but without any serious complications or organ damage. Poor health: the patient suffers from complications of the disease and his condition is poor and has never improved. And the patient passed away. Complications of AWD were recorded and the severity of dehydration was assessed.

Patient Data Collection Form is shown in **Supplementary File A.**

2.5. Patient and public involvement

The patients did not participate in the questionnaire design, biological measurements, or outcome measures; neither did they participate in the design, recruitment, and conducting of the study. Furthermore, all patients or their families were informed about the use of the data for research purposes in this study.

2.6. Statistical methods

Patient data extracts were entered into an Excel database and analyzed using the SPSS PC version 24.0 statistical software. Descriptive statistics (mean, standard deviation, frequencies, and percentages) were used to describe the quantitative and categorical variables.

3. Results

3.1. Main Characteristics of the Patients

A total of 1061 AWD patients were admitted to Aleppo University hospital between 22 September and 22 October 2022, with a notable gender distribution showcasing 46.5% as males. The majority were in the middle-age category (30-60 years) and early childhood (<2 years). A predominant proportion of patients (58.6%) were residents from urban areas, and (40.3%)were residents from rural areas. According to the ASA score, 74.4% were healthy (ASA1).

In most cases (63%) patients could not define the infection source. It seems that the recent AWD outbreak in Syria is not associated with tap water contamination, as no clear clustering of cases were identified. Intriguingly, a diverse range of potential infection sources emerged from patient data within our hospital, including uncontrolled well water, vegetables (notably parsley and mint, might irrigated with contaminated water), and fecal-oral transmission through contaminated street/fast food particularly those integrating vegetables. The summary of the patients' characteristics is shown in **Table 1**.

3.2. Clinical Manifestations and Laboratory Findings

The most frequent clinical manifestations of the patients besides diarrhea were nausea and vomiting, and abdominal cramps (73.6%, 54.3%) respectively. Except for WBC count, most of the patients had normal laboratory tests. 47.6% of patients had hemoglobin between (10-17 g/dL). Platelets were also within the normal range in 77.5% of patients. On the other hand, 55.8% of patients had WBC over 10*10^9/L. All Laboratory tests and Clinical Manifestations are demonstrated in detail in **Table 2**.

3.3. Patients Management

The mainstay of treatment is aggressive volume repletion with adjuvant antibiotic therapy. 77.7% of patients needed intravenous rehydration, 33.4% were given Lactated Ringer solution, and 23.6% got Isotonic sodium chloride solution. Also, 65.7% got oral rehydration salts (ORS). Regarding antibiotics, doxycycline and ciprofloxacin were prescribed in most (61%). Other antibiotics were also used in some cases, such as tetracycline, trimethoprim/sulfamethoxazole, furazolidone, and others. The accurate proportions are shown in **Table 3**.

3.4. Outcome of the Study

According to the available data, 38.7% of patients suffered from serious complications, and the most frequent complications following AWD were mainly electrolyte imbalance (28.2%) and severe dehydration (16.3%). Moreover, complications such as acute kidney injury, volume shock, and hypoglycemia happened in only small proportions. Only four patients (0.4%) passed away during the hospital stay. **Table 4**

4. Discussion

Between September and October 2022, Aleppo University Hospital admitted 1061 patients with AWD, most of whom were middle-aged or young children. The results of the 2017 outbreak in Yemen also show a similar pattern to our findings, with the middle-aged (15-49 years) and children (less than 15 years) groups being the most affected.[7,8] In the same context, 69% of those infected with the Nigerian outbreak in 2005 were 15 years old, and above, and 90% of the deaths were in this age group, according to Shittu et al.[9] As well as in the 2004 Nepal outbreak.[10] What may explain these results is that these age groups are more exposed to known sources of infection than others. Females are slightly more affected, but there is no statistical significance for the incidence rates related to sex. This is due to the fact that cholera is an infectious disease. Data from Bangladesh confirm this finding.[11]

The previous outbreak in Syria does not appear to be linked to tap water contamination, but rather to potential sources such as uncontrolled well water and contaminated vegetables, similar to outbreaks in other countries like Yemen and Nigeria. [7,9]

The association of severe watery diarrhea with nausea and vomiting in many unmanaged cases is what worsens the situation and leads the patient to dehydration and electrolyte disturbance, which may be dangerous in many cases. Only a few studies in the medical literature have highlighted this association, including the study that highlighted the AWD during the 2017-2019 Rohingya crisis in Cox's Bazar, Bangladesh. [10]

We relied on case management on what was previously known. We determined the amount and type of fluid resuscitation according to the level of volume depletion. Mild cases, which constitute most cases, were treated with oral rehydration. As for moderate and severe cases, urgent intravenous rehydration through Lactated Ringer solution or isotonic sodium chloride solution was the key to restoring circulation. Nevertheless, antibiotics were also considered in many patients, and electrolyte replacement in selective patients.[12]

38.7% of patients experienced significant complications after being diagnosed with AWD. The most common complications were electrolyte imbalance (28.2%) and severe dehydration (16.3%). Other complications, such as acute kidney injury, volume shock, and hypoglycemia, occurred in smaller numbers. Additionally, only a small percentage of patients (0.4%) died while in the hospital. This is consistent with outbreaks in other countries. Iraq, for instance, confirmed 3,063 cholera cases and 19

(0.6%) deaths, while Lebanon announced 5,372 confirmed and suspected cholera cases with 23 (0.4%) deaths. [3]

Conclusion

This study reached descriptive results similar to studies in previous AWD outbreaks in developing countries such as Yemen, Nigeria, and Lebanon. We reported the source of the infection, such as contaminated well water and vegetables. However, we did not notice an improvement in the results, whether in terms of morbidity or mortality, compared to the previous outbreaks. Therefore, future studies must investigate the risk factors that increase the spread and the severity of the disease and investigate the best management method.

Competing interests None declared.

Patient consent for publication Not required.

Data availability statement

The data of our study is available at the corresponding author. We welcome any research group that can submit a research proposal providing information on background, research questions, and methods as well as authorship for new collaborations. Research proposals will be reviewed by a scientific committee.

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Authors contributions

Ahmad Yamen Arnaout; Study Coordinator, Study Design, methodology, validation, data analysis, data interpretation, writing – original draft and reviewing.

Yaman Nerabani; writing – original draft and reviewing.

Mohamad Nabhan Sawas; data collector, data cleaning, writing – original draft and reviewing.

Tala Jouma Alhejazi; writing – original draft and data interpretation.

Mohamad Ali Farho; data collector, writing – original draft and reviewing.

Muhammad Besher Shabouk; writing – original draft and reviewing.

Hassan Alshaker; writing – original draft and data interpretation.

Baraa Shebli; Study Coordinator, and validation.

Mostafa Helou; Study Coordinator, and validation.

Bashir Badawi Mobaied; Scientific supervision, validation and reviewing.

Mohamad Bassel Mouti; Scientific supervision, validation and reviewing.

Fares Kady; Scientific supervision, validation and reviewing.

Ziad aljarad; Study coordinator, Scientific supervision, validation and reviewing.

Aleppo University Hospital Team; Data collection Team. ***Table 5***

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Table 1: Main Characteristics of the Patients

	AWD Cases	Percent	Total
Gender (Male, n)	493	46.5	1061
Age Category			1061
<2	206	19.4	

	2 -5	99	9.3	
	5 - 10	86	8.1	
	10 – 18	140	13.2	
	18 -30	146	13.8	
	30 - 60	289	27.2	
	>60	95	9.0	
Geographic				1058
	Urban life	620	58.6	
	Rural life	426	40.3	
	Nomad life	12	1.1	
Shock Index (SI)				862
	Under 0.6	52	6.0	
	0.6 ~ 1 normal	399	46.3	
	1~ 1.4	268	31.1	
	1.4 – 2	126	14.6	
	More than 2	17	2.0	
ASA				1061
	ASA I	789	74.4	
	ASA II	224	21.1	
	ASA III	42	4.0	
	ASA IV	6	0.6	
	ASA V	0		
Infection Source (as reported by patient)				1061
	Contaminated Fruits	25	2.4	
	Contaminated Water	2	0.2	
	Corn Cobs	1	0.1	
	Falafel, peanut and fatteh	15	1.4	
	Fast Food	57	5.4	
	Fish	1	0.1	
	Ice cream	11	1.0	
	Ice cubes	15	1.4	
	Meat	4	0.4	
	Milk	13	1.2	
	Rice	1	0.1	
	Swimming in a Contaminated Pool	3	0.3	
	The infection passed from his\her family	30	2.8	
	Vegetables such as parsley and mint	136	12.8	
	Well Water	79	7.4	

	Unknown	668	63.0

AWD: Acute Watery Diarrhea, **BMI**: Body Mass Index, **ASA:** American Society of Anesthesiologists Classification.
ASA I: Healthy person,
ASA II: Mild systemic disease.
ASA III: Severe systemic disease.
ASA IV: Severe systemic disease that is a constant threat to life.
ASA IV: A moribund person who is not expected to survive without the operation.
ASA V: A declared brain-dead person whose organs are being removed for donor purposes.

Table 2: Clinical Manifestations and Laboratory Findings

		AWD Cases	Percent	Total
Clinical Presentation in addition to diarrhea				
	Nausea and Vomiting	781	73.6	1061
	Abdominal cramps	576	54.3	1061
	Other	139	13.1	1061
Severity of dehydration				1003
	Severe	174	17.3	
	Some	507	50.5	
	None	322	32.1	
Laboratory Findings				
Hemoglobin (g/dL)				845
	Less than 10	197	23.3	
	10 - 12	243	28.8	
	12 - 17	387	45.8	
	more than 17	18	2.1	
Platelet (10^3 /µL)				821
	Less than 15	3	0.4	
	15 - 30	6	0.7	
	30 - 50	4	0.5	
	50 - 150	50	6.1	
	150 - 450	636	77.5	
	more than 450	122	14.9	
Serum Creatinine (mg/dl)				812
	less than 0.6	311	38.3	
	0.6 - 1.3	344	42.4	
	more than 1.3	157	19.3	
Serum Urea (mg/dl)				821
	10 - 50	639	77.8	

	more than 50	182	22.2	
WBC (10^9/L)				744
	less than 4.5	34	4.6	
	4.5 - 10	295	39.7	
	more than 10	415	55.8	
Random Glucose (mg/dl)				579
	less than 40	32	5.5	
	40 - 120	365	63	
	120 - 200	150	25.9	
	more than 200	32	5.5	
Serum potassium (mEq/L)				817
	less than 3.5	270	33	
	3.5 - 5	516	63.2	
	more than 5	31	3.8	
Serum Sodium (mEq/L)				814
	less than 135	352	43.2	
	135 - 145	446	54.8	
	more than 145	16	2	

AWD: Acute Watery Diarrhea
Severity of dehydration:
Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry, absent tears, Unable to drink, drinks poorly)
Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)
None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst).
WBC: Wight Blood Cells

311

312

313

Table 3: Patients management

		AWD Cases	Percent (of total AWD cases)
Intravenous Rehydration			
	Lactated Ringer solution.	354	33.4
	Isotonic sodium chloride solution	250	23.6
	Other	138	20.7
	Total	728	68.6
ORS rehydration		697	65.7
Antibiotic treatment			
	Total	682	64.3
	Tetracycline	7	0.7
	Doxycycline	328	30.9

	Trimethoprim/sulfamethoxazole	2	0.2
	Furazolidone	5	0.5
	Ciprofloxacin	319	30.1
	Ampicillin	0	0
	Other	233	22
Potassium supplementation			
	Oral	18	1.6
	Intravenous	233	22.0
	Potassium-sparing diuretics	3	0.3
	Total	254	23.9

AWD: Acute Watery Diarrhea**, ORS**: Oral Rehydration Solution

Table 4: Outcomes of the Study

		AWD Cases	Percent	Total
Patient Discharge				1061
	Same day with admission	741	69.8	
	Next day	32	3.0	
	After	288	27.1	
Need for ICU		10	0.9	1061
Need for Dialysis		9	1	907
Patient Health at discharge*				1061
	Good	847	79.8	
	Moderate	187	17.6	
	Poor	23	2.2	
	Died before discharge	4	0.4	
Complications at admission and in the hospital				
	All	411	38.7	1061
	Severe Dehydration	173	16.3	1061
	Electrolyte Imbalance	299	28.2	1061
	Acute Kidney Injury	10	0.9	1061
	Shock	21	2	1061
	Hypoglycemia	32	3	1061
	Other	19	1.8	1061
Patient's Health after follow-up				1061
	Good	657	61.9	
	Moderate	130	12.3	
	Bad	52	4.8	
	Die (in the hospital)	4	0.4	

AWD: Acute Watery Diarrhea.
*: Good health: the patient no longer had any symptoms or mild symptoms from the convalescent stage. Moderate Health: the patient is still suffering from the symptoms of the disease, but without any serious complications or damage to the organs. Poor health: the patient suffers from complications of the disease and his condition is poor and has never improved.

Table 5: **Aleppo University Hospital Team**

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Acute Watery Diarrhea Patient Data Collection Form

Data collection form for Acute Watery Diarrhea Patients

Part A: Demographics

1) ID _____

2) Gender: Male / Female

3) Patient Age_____

4) Geographic

- Urban life
- Rural life
- Nomad life

5) Potential Source of Infection _____

Part B: Admission details

1) Admission Date DD/MM/YYYY

_____

2) Diarrhea Onset before

_____ days

3) Clinical Presentation

- **Diarrhea**
  how many times in a day? _____.
- **Vomiting**
- **Abdominal cramps**
- **Fever**
- **Dehydration**
- **Other**
  If Other, Please Specify
  _____
  _____

4) Chief Complaint was

_____

_____

5) Assessment of severity of dehydration:

- **Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry, tears absent, Unable to drink, drinks poorly)**
- **Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)**
- **None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)**

Part D: Co-morbidities

1) Height _____ m

2) Weight _____ kg

3) Patient BMI_____ kg/m^2

4) Heart Rate _____

5) Blood Pressure _____

7) Shock Index (SI) (heart rate (HR) / systolic blood pressure (SBP)) _____

6) ASA Grade (chose number between 1 >>5)____

- ASA 1: Healthy person. Example: Fit, nonobese (BMI under 30), a nonsmoking patient with good exercise tolerance.
- ASA 2: well-controlled disease (e.g., treated hypertension, obesity with BMI under 35, frequent social drinker, or cigarette smoker).
- ASA 3: a severe systemic disease that is not life-threatening. (e.g., poorly treated hypertension or diabetes, morbid obesity, chronic renal failure).
- ASA 4: a severe systemic disease that is a constant threat to life.
- ASA 5: A moribund person who is not expected to survive without the intervention.

7) Comorbidities:

- ☐ Diabetes mellitus
- ☐ Hypertension requiring medication
- ☐ Ischemic heart disease
- ☐ Chronic obstructive pulmonary disease (COPD)
- ☐ Asthma
- ☐ Ulcer disease
- ☐ Known liver cirrhosis
- ☐ Deep Vein Thrombosis
- ☐ Urinary Tract infection
- ☐ Chronic immunosuppression
- ☐ Cerebrovascular accident
- ☐ Chronic kidney disease (on dialysis or GFR <30 mL/min/1.73m2)
- ☐ Others (18)

If other, please Specify

_____

8) Past history of COVID-19 infection (within the last 6 months)

- Yes
- No

Time gap between COVID-19 infection and Cholera Infection (in weeks): _____ Weeks

9) Previous open abdominal surgery/laparotomy
- Yes
- No

If Yes, please indicate the cause

_____

10) Past Gastrointestinal Surgery
- Yes
- No

If Yes, please indicate the Cause

_____

_____

11) Past Medicine History:
- Antacids
- Histamine receptor blockers
- Proton pump inhibitors (PPI)
- Antibiotics (within last month)

  If Yes, please specify Antibiotics Group

  _____

  _____
- Other

  _____

  _____

12) Current smoker within 1 year: (even with hookah)
- Active smoker
  - A daily smoker
  - An occasional smoker
- Ex-smoker
- Never smoked

13) Is the patient:
- Not drinking alcohol.
- Drinking alcohol in moderation (2 drinks or less in a day for men and 1 drink or less in a day for women)
- Binge Drinking (consuming 5 or more drinks (male), or 4 or more drinks (female), in about 2 hours.)
- Heavy Alcohol Use (binge drinking on 5 or more days in the past month.)

14) Cholera Vaccine
- Yes
- No

If yes, please specify the type of Vaccine

_____

Part E: Cholera Workup

1) Diagnosis was made according to:
- **Clinically (According to WHO: In an area with a noted cholera epidemic, a patient aged 5 years or older develops acute watery diarrhea, with or without vomiting)**
- **Biochemical confirmation and characterization of the isolate.**
- **Polymerase chain reaction (PCR) tests.**

2) If Biochemical confirmation and characterization of the isolate was done please tick all that apply
- **Stool Examination**
- **Stool Culture**
- **Serotyping and Biotyping**

  If done, Please specify the type

  _____

  _____
- **Hematologic Tests**
- **Metabolic Panel**

3) Laboratory findings (If done)
- Hemoglobin (g/dL) _____
- Platelet (10^3 /µL) _____
- Bilirubin Total (mg/dL) ____
- Bilirubin direct (mg/dL) ___
- AST (U/L) _____
- ALT (U/L) _____
- Urea (mg/dL) _____
- Serum creatinine (mg/dL)__
- Alkaline phosphatase _____
- White blood cell count, 10^9/L _____
- K+ _____
- Na+ _____
- HCO3- _____
- PCo2 _____
- Ph _____
- Glucose _____
- Blood type (ABO +/-) _____

Part F: Treatment & Management

1) Intravenous Rehydration
- **Yes**
- **No**

If yes, please set the volume of intravenous infusion at the day case

_____

_____ml/day case. (example: 2000 ml / day case)

Set the rate of Intravenous Rehydration

_____

_____

_____ml/kg in hours (example; 30ml/kg in first hour then 70 ml / kg in next five hours)

Type of solution
- **Lactated Ringer solution.**
- **Isotonic sodium chloride solution**
- **Other _____**

2) ORS rehydration:
- **Yes**
- **No**

If yes, please set the volume of ORS Solution at the day case

_____

_____**ml/day case. (example: 2000 ml / day case)**

Set the rate of Intravenous Rehydration

_____

_____**ml/kg in hours (example; 30ml/kg after each loose stool then 70 ml / kg in next five hours)**

3) Antibiotic treatment

- ○ **Yes**
- ○ **No**

If yes, please specify

- □ **Tetracycline**
- □ **Doxycycline**
- □ **Trimethoprim and sulfamethoxazole**
- □ **Furazolidone**
- □ **Ciprofloxacin**
- □ **Ampicillin**
- □ **Other** _____

Dose

- ○ **Single dose**
- ○ **Multiple dose**

_____ **(for example 60 mg / once a day)**

4) Sodium Bicarbonate

- ○ **Yes**
- ○ **No**

If yes, please specify the reason

_____

_____

5) Potassium supplementation

- ○ **Yes**
  - □ **Oral potassium supplementation**
  - □ **Intravenous potassium replacement**
  - □ **Potassium-sparing diuretics**
- ○ **No**

If yes, please specify the reason

_____

Part G: Follow-up Data at Staying in hospital

1) Patient Discharge

- ○ **Same day with admission**
- ○ **Next day**
- ○ **After _____ days (example after two days)**

2) Did the patient die?

- ○ **Yes**
- ○ **No**

If yes, please specify the reason

_____

_____

3) Patient Health at discharge

- ○ **Good**
- ○ **Moderate**
- ○ **Bad**

4) Did the patient need ICU care?

- ○ **Yes**
- ○ **No**

If Yes, please describe the reason

_____

_____

5) Did the patient need dialysis

- ○ **Yes**
- ○ **No**

If yes, please specify the reason

_____

_____

Did the patient have any complication through staying at hospital?

- ○ **Yes**
- ○ **No**

If yes, please specify

_____

_____

Part H: Follow-up Data during 30 days

1) Did the patient have any complication through 30 days after the discharge?

- ○ Yes
- ○ No

If yes, please specify _____

2) Did the patient die as a result of a complication?

- ○ Yes
- ○ No

If Yes, please specify the reason

_____

_____

3) Any additional pharmacological treatment instituted by the medical team after discharge at home (other than routine treatment and prescription at discharge)

- ○ Yes
- ○ No

If Yes, please specify

_____

_____

4) Patient Health after 30 days from the admission:

- ○ Good
- ○ Moderate
- ○ Bad

Any Additional Notes: _____

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1,2
Introduction			**3**
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			**4 , 5**
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	4
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4 , 5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	4
Study size	10	Explain how the study size was arrived at	4
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	5
		(*d*) If applicable, explain how loss to follow-up was addressed	5
		(*e*) Describe any sensitivity analyses	5
Results			5 , 6

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	5
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5
		(b) Indicate number of participants with missing data for each variable of interest	
		(c) Summarise follow-up time (eg, average and total amount)	
Outcome data	15*	Report numbers of outcome events or summary measures over time	5 , 6
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	5 , 6
		(*b*) Report category boundaries when continuous variables were categorized	
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	
Discussion			6
Key results	18	Summarise key results with reference to study objectives	
Limitations			3
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	
Other information			7
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	7

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Acute Watery Diarrhea Cases During Cholera Outbreak in Syria: A Cohort Study

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Acute Watery Diarrhea Cases During Cholera Outbreak in Syria: A Cohort Study

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Abstract

Objectives: The aim of this study is a descriptive presentation of cases of acute watery diarrhea (AWD) that were presented to Aleppo University Hospital (AUH) during the recent cholera outbreak in Syria.

Design: Prospective, observational, cohort, study.

Setting and Participants: A total of 1061 AWD patients were admitted to AUH during the timeframe of September 20th, 2022, to October 20th, 2022. The data collection was done through a structured questionnaire. This includes comprehensive clinical observation, laboratory analyses, therapeutic interventions, and holistic case evaluations

Results: The analysis has revealed notable insights; A predominant proportion of patients (58.6%) were residents from urban areas, and (40.3%) were residents from rural areas. Intriguingly, a diverse range of potential infection sources emerged from patient data within our hospital, including uncontrolled well water, vegetables, and fecal-oral transmission through contaminated street/fast food. At discharge, most patients were in good health (79.7%), followed by moderate health (17.6%) and poor health (2.3%), with a minimal percentage dying before discharge (0.4%). The most common complications reported at admission and during hospitalization included electrolyte imbalance (28.2%), followed by severe dehydration (16.3%). In the follow-up period, the majority of patients exhibited good health (81.0%). Older patients (>60 years) had poorer outcomes, with 8.4% having poor health and 4.2% death rate.

Conclusions: The study found results consistent with previous AWD outbreaks in developing countries like Yemen, Nigeria, and Lebanon. Preventative measures like improving water sanitation and hygiene practices are essential to prevent future outbreaks and ease the strain on healthcare systems. Therefore, future studies must investigate the risk factors that increase the spread and the severity of the disease and investigate the best management method.

Strengths and limitations

- The study provided a comprehensive analysis of AWD cases in Aleppo University Hospital following the declaration of a cholera outbreak in Syria, offering valuable insights into the impact and management of the disease.

- By including all patients with AWD, regardless of age or admission status, the research captured a broad spectrum of cases, enhancing the diversity and representativeness of the findings.
- The research, which was non-interventional and based solely on observation, included all patients with AWD, regardless of age or whether they were admitted to the hospital or discharged on the same day.
- The study offers detailed management and clinical assessment data, as well as a two-week post-discharge follow-up.
- As the key medical institution in the city where the first cholera case was identified, this research stands as a crucial resource for understanding and addressing the ongoing outbreak.

1. Introduction

Acute Watery Diarrhea (AWD) is a condition that lasts less than 14 days due to an enterotoxigenic bacteria or viral infection in the gastrointestinal system. The bacterial causes of AWD are many, including Vibrio cholera, Shigella, Salmonella, E Coli, or Campylobacter infection.

Usually, AWD outbreaks are critical challenges to all healthcare systems because of the rapid manifestation and idiopathic source of infection. Besides, most reported cases are distributed in areas where numerous potential sources of infection are found, such as unclean drinking water, insufficiency of water filtration infrastructures, animal exposure, and sewage-contaminated food and drinks. Moreover, these outbreaks differ between countries, depending on healthcare systems and response to emergencies, sanitation of food and water facilities, and population awareness of common infectious diseases. Notably, many countries that used to have low rates of AWD have recently been outbreak locations with new high records. Nearly 70,106 AWD reported cases in only three MENA (Middle East and North Africa) countries so far, according to the WHO's latest December 2022 reports. [1–3]

One of the most suspected and proven causes of AWD cases is Cholera: a waterborne intestinal infection that transmits through the fecal-oral route. To date, cholera remains a global health threat with high morbidity and mortality. Although cholera is easy to treat, delaying rehydration can make it a serious and life-threatening disease as it can cause volume depletion within a few hours. While many countries in the developed world have succeeded in completely eradicating cholera decades ago, cholera still has occasional outbreaks in low- and middle-income countries from time to time. In late 2022, Cholera caused many outbreaks in the Eastern Mediterranean region. Iraq, for instance, confirmed 3,063 cholera cases and 19 deaths, while Lebanon announced 5,372 confirmed and suspected cholera cases with 23 deaths.[1,2] Unfortunately, after nearly 20 years since the last cholera outbreak in Syria, cholera also returned in late 2022 to spread widely in the country, posing a challenge to the health system in the Syrian Arab Republic. [3]

By 10 December 2022 Syria reported 61,671 suspected and confirmed cholera cases, besides 100 deaths among its 14 governorates until 10 December. It all started on 10 September 2022, when the Ministry of Health (MoH) declared a cholera outbreak in Aleppo Governorate. After that date, other governorates enhanced the reporting of AWD cases / cholera-suspected cases, and the numbers of most affected were as follows; 20,103 in Deir Ez-Zor, 14,142 in Idleb, 12,818 in Raqqa, and 11,617 in Aleppo, according to the WHO and the Syrian MoH reports. The reports also stated a case fatality rate of 0.2% and an overall cholera positivity of 46%. [3]

Despite the high prevalence of AWD and cholera outbreaks in the region, there is a lack of detailed information on the response quality and outcomes in patients and healthcare systems during these emergencies. By reporting on the cases in Aleppo University Hospital (AUH) during the outbreak, we can contribute valuable insights into the effectiveness of the response measures implemented by the health authorities and the challenges faced in managing AWD and cholera cases in a resource-limited setting. This information can help improve future outbreak preparedness and response strategies, potentially reducing morbidity and mortality rates associated with these infectious diseases.

This study aims to report AWD cases in AUH, Aleppo Governorate, during the outbreak -between 20 September and 20 October- and assess the response quality and outcomes in patients and the hospital healthcare system within 30-days of reporting the cases.

2. Methods

2.1. Study design and Participants

AWD cases study in Syria is a localized, longitudinal study involving people of all ages. We conducted This prospective cohort profile study to enhance our understanding of AWD and to collect a voluminous and superior-quality dataset concerning the condition. Patients were admitted to AUH between 20th September 2022 and 20th October 2022. The process was initiated following a request for verbal informed consent by physicians prior to the administration of the questionnaire, and in accordance to Strengthening the reporting of observational studies in epidemiology (STROBE) statement. [4]

2.2. Sample size calculation

The sample size for this study was calculated based on the estimated prevalence of AWD in the population. Using a conservative estimate of 2%, a confidence level of 95%, and a margin of error of 0.5%, the required sample size was calculated to be 385 participants. To account for potential dropouts and incomplete data, we aimed to recruit a more than 385 participants for this study during the chosen period for the study.

2.3. Ethical approval

The study was approved by the AUH. The data used in this study were completely anonymized before the authors had access to them. Moreover, this study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments, and under ethical approval from the ethics committee at the Faculty of Medicine, University of Aleppo, with registered reference number 1932, ensuring compliance with ethical standards and guidelines for research involving human subjects.

2.4. Bias

The dean of the faculty of medicine, the head of the Department of Internal Medicine, the head of the Department of Pediatric Medicine, and the general director of AUH Performed the overall review and validation of the project. The medical staff also participated in the research work. Investigators performed fieldwork; interviewers (in charge of the interview and filling out the data) and doctors (responsible for health assessment). We spare no effort to ensure that all data was registered accurately.

2.5. Data collection and Variables

The patients were interviewed through a structured questionnaire to gather the patients' characteristics, including demographics (i.e., age, gender, place of residence), admission details (e.g., dehydration and loss of fluid, stool description.), comorbidities, and previous medications.

Clinical examination and patients' history data were also recorded, such as measuring blood pressure and heart rate and taking clinical symptoms such as diarrhea, nausea and vomiting, fever, and others.

Moreover, we recorded cholera details, including diagnosis, laboratory findings, rehydration, management, and follow-up.

The questionnaire was designed according to the international standards. All laboratory analyses were conducted by the central laboratory at AUH, such as count blood cells, and Blood biochemistry (Blood glucose, Serum creatinine, Urea, k+, Na+).

The Patients were also categorized into five grades based on their health status using the American Society of Anaesthesiologists physical status classification. [5] Habits, including smoking and alcohol consumption, were evaluated using WHO's Smoking and Tobacco Use Policy which classifies patients into four categories: A daily smoker, who smokes any tobacco product at least once a day, an occasional smoker, who smokes, but not every day, a former smoker and a never smoker. [6]

The age of the patients was divided into several age groups.

The patients were evaluated, and their data was recorded during the hospital stay and two weeks after their discharge, and if their condition did not improve after two weeks, they were followed up for 30 days.

The patients were evaluated at discharge and two weeks later and classified into several health categories: good health: the patient no longer has any symptoms or mild symptoms from the convalescent stage. Moderate Health: the patient is still suffering from the symptoms of the disease but without any serious complications or organ damage. Poor health: the patient suffers from complications of the disease and his condition is poor and has never improved. And the patient passed away. Complications of AWD were recorded and the severity of dehydration was assessed.

Patient Data Collection Form is shown in **Supplementary File A.**

2.6. Patient and public involvement

The patients did not participate in the questionnaire design, biological measurements, or outcome measures; neither did they participate in the design, recruitment, and conducting of the study. Furthermore, all patients or their families were informed about the use of the data for research purposes in this study.

2.7. Statistical methods

Patient data extracts were entered into an Excel database and analyzed using the SPSS statistical software, version 26.0. Descriptive statistics, including frequencies and percentages, were employed to summarize the main results of the patients, encompassing gender, age category, geographic location, shock index, ASA, and infection source. Quantitative variables were categorized, and frequencies and percentages for these categories were calculated. Subgroups were analyzed by age groups for all main study variables to provide a comprehensive assessment of the data. To address missing data in our study, the last observation carried forward technique was employed. This method entails carrying forward the most recent recorded observation to fill in missing data points during follow-ups. The follow-up period lasted two weeks, but extended up to a month for patients with worsening conditions. By utilizing this approach, we were able to methodically handle missing data and guarantee that our analyses were conducted using the most comprehensive dataset possible.

3. Results

3.1. Main Characteristics of the Patients

A total of 1061 AWD patients were admitted to AUH between 22 September and 22 October 2022, with a notable gender distribution showcasing 46.5% as males. The majority were in the middle-age category

(30-60 years) and early childhood (<2 years). A predominant proportion of patients (58.6%) were residents from urban areas, and (40.3%) were residents from rural areas. According to the ASA score, 74.4% were healthy (ASA1).

In most cases (63%) patients could not define the infection source. It seems that the recent AWD outbreak in Syria is not associated with tap water contamination, as no clear clustering of cases were identified. Intriguingly, a diverse range of potential infection sources emerged from patient data within our hospital, including uncontrolled well water, vegetables (notably parsley and mint, might irrigated with contaminated water), and fecal-oral transmission through contaminated street/fast food particularly those integrating vegetables. The summary of the patients' characteristics is shown in **Table 1**.

3.2. Clinical Manifestations and Laboratory Findings

The most frequent clinical manifestations of the patients besides diarrhea were nausea and vomiting, and abdominal cramps (73.6%, 54.3%) respectively. Except for WBC count, most of the patients had normal laboratory tests. 47.6% of patients had hemoglobin between (10-17 g/dL). Platelets were also within the normal range in 77.5% of patients. On the other hand, 55.8% of patients had WBC over 10*10^9/L. All Laboratory tests and Clinical Manifestations are demonstrated in detail in **Table 2**.

3.3. Patients Management

The mainstay of treatment is aggressive volume repletion with adjuvant antibiotic therapy. 77.7% of patients needed intravenous rehydration, 33.4% were given Lactated Ringer solution, and 23.6% got Isotonic sodium chloride solution. Also, 65.7% got oral rehydration salts (ORS). Regarding antibiotics, doxycycline and ciprofloxacin were prescribed in most (61%). Other antibiotics were also used in some cases, such as tetracycline, trimethoprim/sulfamethoxazole, furazolidone, and others. The accurate proportions are shown in **Table 3**.

3.4. Outcome of the Study

The table provides results from a study on patients with Acute Watery Diarrhea (AWD). Of the 1061 cases, most patients were discharged the same day as admission (69.8%), with smaller percentages discharged the next day (3.0%) or after a longer period (27.1%). A small number of patients required ICU care (0.9%) and dialysis (1%). At discharge, the majority of patients had good health (79.7%), followed by moderate health (17.6%) and poor health (2.3%). A very small percentage of patients died before discharge (0.4%).

Complications reported at admission and during the hospital stay include severe dehydration (16.3%), electrolyte imbalance (28.2%), acute kidney injury (0.9%), shock (2.0%), hypoglycemia (3.0%), and other issues (1.8%). Among them, the most common complications were electrolyte imbalance (28.2%) followed by severe dehydration (16.3%).

In the follow-up period, most patients showed good health (81.0%), followed by moderate health (14.6%) and poor health (3.4%). A small number of patients died during follow-up, with four deaths at AUH and six deaths at other hospitals (0.9% in total). **Table 4**

Sub-group analysis after two weeks to one month from admission, the majority of patients in all age classifications showed good health outcomes, with percentages ranging from 69.5% to 88.9%. The highest percentage of patients with bad health outcomes were in the Age7 (>60 years) category at 8.4%, while the highest percentage of deaths occurred in the same age group at 4.2%, followed by individuals under 2 years at 1.5%. Overall, the data suggests variations in patient health outcomes based on age, with younger individuals having a higher likelihood of better health outcomes compared to older age groups.

Upon analysis two weeks to one month after admission, the data revealed that a large percentage of patients across all age groups experienced positive health outcomes, ranging from 69.5% to 88.9%. The Age7 (>60 years) group had the highest percentage of patients with poor health outcomes at 8.4%, while the highest death rate was observed in the same age group at 4.2%, followed closely by patients under 2 years at 1.5%. These findings indicate varying health outcomes based on age, with younger patients generally showing a greater probability of recovery compared to older individuals. **(Supplementary File B)**

4. Discussion

Between September and October 2022, AUH admitted 1061 patients with AWD, most of whom were middle-aged or young children. The results of the 2017 outbreak in Yemen also show a similar pattern to our findings, with the middle-aged (15-49 years) and children (less than 15 years) groups being the most affected.[7,8] In the same context, 69% of those infected with the Nigerian outbreak in 2005 were 15 years old, and above, and 90% of the deaths were in this age group, according to Shittu et al.[9] As well as in the 2004 Nepal outbreak.[10] What may explain these results is that these age groups are more exposed to known sources of infection than others. Females are slightly more affected, but there is no statistical significance for the incidence rates related to sex. This is due to the fact that cholera is an infectious disease. Data from Bangladesh confirm this finding.[11]

The previous outbreak in Syria does not appear to be linked to tap water contamination, but rather to potential sources such as uncontrolled well water and contaminated vegetables, similar to outbreaks in other countries like Yemen and Nigeria. [7,9]

The association of severe watery diarrhea with nausea and vomiting in many unmanaged cases is what worsens the situation and leads the patient to dehydration and electrolyte disturbance, which may be dangerous in many cases. Only a few studies in the medical literature have highlighted this association, including the study that highlighted the AWD during the 2017-2019 Rohingya crisis in Cox's Bazar, Bangladesh. [10]

We relied on case management on what was previously known. We determined the amount and type of fluid resuscitation according to the level of volume depletion. Mild cases, which constitute most cases, were treated with oral rehydration. As for moderate and severe cases, urgent intravenous rehydration through Lactated Ringer solution or isotonic sodium chloride solution was the key to restoring circulation. Nevertheless, antibiotics were also considered in many patients, and electrolyte replacement in selective patients.[12]

38.7% of patients experienced significant complications after being diagnosed with AWD. The most common complications were electrolyte imbalance (28.2%) and severe dehydration (16.3%). Other complications, such as acute kidney injury, volume shock, and hypoglycemia, occurred in smaller numbers. Additionally, only a small percentage of patients (0.4%) died while in the hospital. This is consistent with outbreaks in other countries. Iraq, for instance, confirmed 3,063 cholera cases and 19 (0.6%) deaths, while Lebanon announced 5,372 confirmed and suspected cholera cases with 23 (0.4%) deaths. [3]

This study has several limitations that impact the generalizability and validity of the findings. Firstly, the limited sample size, as the study was conducted at AUH, may not accurately represent all cases of AWD in Syria. Additionally, selection bias was introduced as only cases admitted to the hospital were included, potentially skewing the results. The lack of long-term follow-up limited the assessment of outcomes beyond 30 days post-discharge. The study was limited to a specific region in Syria and may

not be applicable to other regions with different healthcare settings, demographics, and environmental factors.

Conclusion

This study reached descriptive results similar to studies in previous AWD outbreaks in developing countries such as Yemen, Nigeria, and Lebanon. We reported the source of the infection, such as contaminated well water and vegetables. However, we did not notice an improvement in the results, whether in terms of morbidity or mortality, compared to the previous outbreaks. Therefore, future studies must investigate the risk factors that increase the spread and the severity of the disease and investigate the best management method.

Competing interests None declared.

Patient consent for publication Not required.

Supplementary Files Description

Supplementary File A Data Collection Acute Watery Diarrhea Study Sheet.docx

Supplementary File B Subgroups Age Analysis.docx

Data availability statement

The establishment of a dataset comprising over a thousand patients with AWD during the 2022 cholera outbreak in Aleppo, Syria, along with comprehensive patient observations, holds significant importance. By documenting and analyzing such a large dataset, we are better positioned to understand the characteristics, trends, and outcomes of cholera cases during this particular outbreak. This dataset can serve as a valuable resource for public health officials, researchers, and healthcare providers in devising strategies for more effective prevention, treatment, and control of cholera in similar settings. The dataset is available at the corresponding author. We welcome any research group that can submit a research proposal providing information on background, research questions, and methods as well as authorship for new collaborations. Research proposals will be reviewed by a scientific committee. Additionally, when referencing or using this research data, proper citation must be provided to acknowledge the source and give credit to the original researchers and contributors. Respecting these guidelines ensures transparency, ethics, and integrity in the utilization of the valuable data collected and analyzed in this study.

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Authors contributions

Ahmad Yamen Arnaout played a key role in coordinating the study, designing the study, developing the methodology, validating the findings, conducting data analysis, interpreting the data, and contributing to the original draft of the manuscript, as well as review of the final version. **Yaman Nerabani** contributed to the writing of the original draft and provided critical feedback during the manuscript review process. **Mohamad Nabhan Sawas** was involved in data collection, data cleaning, writing the original draft, and reviewing the manuscript. **Tala Jouma Alhejazi** was responsible for writing the original draft of the manuscript and contributing to data interpretation. **Mohamad Ali Farho** participated in data collection, writing the original draft, and reviewing the manuscript. **Hassan Alshaker, and Khaled Arnaout** provided input in writing the original draft and contributed to data interpretation. **Baraa Shebli and Mostafa Helou** served as Study Coordinators and validated the study. **Bashir Badawi Mobaied, Mohamad Bassel Mouti, Fares Kady, and**

Ziad aljarad provided scientific supervision, validated the study, and critically reviewed the manuscript. The **Aleppo University Hospital Team** played a critical role in data collection for this study.

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Table 1: Main Characteristics of the Patients

	AWD Cases	Percent	Total
Gender (Male, n)	493	46.5	1061

Age Category				1061
	<2	206	19.4	
	2 -5	99	9.3	
	5 - 10	86	8.1	
	10 – 18	140	13.2	
	18 -30	146	13.8	
	30 - 60	289	27.2	
	>60	95	9.0	
Geographic				1058
	Urban life	620	58.6	
	Rural life	426	40.3	
	Nomad life	12	1.1	
Shock Index (SI)				862
	Under 0.6	52	6.0	
	0.6 ~ 1 normal	399	46.3	
	1~ 1.4	268	31.1	
	1.4 – 2	126	14.6	
	More than 2	17	2.0	
ASA				1061
	ASA I	789	74.4	
	ASA II	224	21.1	
	ASA III	42	4.0	
	ASA IV	6	0.6	
	ASA V	0		
Infection Source (as reported by patient)				1061
	Contaminated Fruits	25	2.4	
	Contaminated Water	2	0.2	
	Corn Cobs	1	0.1	
	Falafel, peanut and fatteh	15	1.4	
	Fast Food	57	5.4	
	Fish	1	0.1	
	Ice cream	11	1.0	
	Ice cubes	15	1.4	
	Meat	4	0.4	
	Milk	13	1.2	
	Rice	1	0.1	
	Swimming in a Contaminated Pool	3	0.3	
	The infection passed from his\her family	30	2.8	

	Vegetables such as parsley and mint	136	12.8
	Well Water	79	7.4
	Unknown	668	63.0

AWD: Acute Watery Diarrhea, **BMI**: Body Mass Index, **ASA:** American Society of Anesthesiologists Classification.
ASA I: Healthy person,
ASA II: Mild systemic disease.
ASA III: Severe systemic disease.
ASA IV: Severe systemic disease that is a constant threat to life.
ASA IV: A moribund person who is not expected to survive without the operation.
ASA V: A declared brain-dead person whose organs are being removed for donor purposes.

Table 2: Clinical Manifestations and Laboratory Findings

		AWD Cases	Percent	Total
Clinical Presentation in addition to diarrhea				
	Nausea and Vomiting	781	73.6	1061
	Abdominal cramps	576	54.3	1061
	Other	139	13.1	1061
Severity of dehydration				1003
	Severe	174	17.3	
	Some	507	50.5	
	None	322	32.1	
Laboratory Findings Hemoglobin (g/dL)				845
	Less than 10	197	23.3	
	10 - 12	243	28.8	
	12 - 17	387	45.8	
	more than 17	18	2.1	
Platelet (10^3 /µL)				821
	Less than 15	3	0.4	
	15 - 30	6	0.7	
	30 - 50	4	0.5	
	50 - 150	50	6.1	
	150 - 450	636	77.5	
	more than 450	122	14.9	
Serum Creatinine (mg/dl)				812
	less than 0.6	311	38.3	

	0.6 - 1.3	344	42.4	
	more than 1.3	157	19.3	
Serum Urea (mg/dl)				821
	10 - 50	639	77.8	
	more than 50	182	22.2	
WBC (10^9/L)				744
	less than 4.5	34	4.6	
	4.5 - 10	295	39.7	
	more than 10	415	55.8	
Random Glucose (mg/dl)				579
	less than 40	32	5.5	
	40 - 120	365	63	
	120 - 200	150	25.9	
	more than 200	32	5.5	
Serum potassium (mEq/L)				817
	less than 3.5	270	33	
	3.5 - 5	516	63.2	
	more than 5	31	3.8	
Serum Sodium (mEq/L)				814
	less than 135	352	43.2	
	135 - 145	446	54.8	
	more than 145	16	2	

AWD: Acute Watery Diarrhea
Severity of dehydration:
Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry, absent tears, Unable to drink, drinks poorly)
Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)
None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst).
WBC: Wight Blood Cells

Table 3: Patients management

		AWD Cases	Percent (of total AWD cases)
Intravenous Rehydration			
	Lactated Ringer solution.	354	33.4
	Isotonic sodium chloride solution	250	23.6
	Other	138	20.7
	Total	728	68.6
ORS rehydration		697	65.7

Antibiotic treatment			
	Total	682	64.3
	Tetracycline	7	0.7
	Doxycycline	328	30.9
	Trimethoprim/sulfamethoxazole	2	0.2
	Furazolidone	5	0.5
	Ciprofloxacin	319	30.1
	Ampicillin	0	0
	Other	233	22
Potassium supplementation			
	Oral	18	1.6
	Intravenous	233	22.0
	Potassium-sparing diuretics	3	0.3
	Total	254	23.9

AWD: Acute Watery Diarrhea**, ORS**: Oral Rehydration Solution

Table 4: Outcomes of the Study

		AWD Cases	Percent	Total
Patient Discharge				1061
	Same day with admission	741	69.8	
	Next day	32	3.0	
	After	288	27.1	
Need for ICU		10	0.9	1061
Need for Dialysis		9	1	907
Patient Health at discharge*				1061
	Good	846	79.7	
	Moderate	187	17.6	
	Poor	24	2.3	
	Died before discharge	4	0.4	
Complications at admission and in the hospital				
	All	411	38.7	1061
	Severe Dehydration	173	16.3	1061
	Electrolyte Imbalance	299	28.2	1061
	Acute Kidney Injury	10	0.9	1061
	Shock	21	2	1061
	Hypoglycemia	32	3	1061
	Other	19	1.8	1061
Patient's Health after follow-up				1061

Good	858	81.0
Moderate	155	14.6
Poor	36	3.4
Die	10 (4 in AUB, & 6 in a other hospital)	0.9

AWD: Acute Watery Diarrhea.
*: Good health: the patient no longer had any symptoms or mild symptoms from the convalescent stage. Moderate Health: the patient is still suffering from the symptoms of the disease, but without any serious complications or damage to the organs. Poor health: the patient suffers from complications of the disease and his condition is poor and has never improved. **AUB**: Aleppo University Hospital.

Acute Watery Diarrhea Patient Data Collection Form

Data collection form for Acute Watery Diarrhea Patients

Part A: Demographics

1) ID _____

2) Gender: Male / Female

3) Patient Age_____

4) Geographic

- Urban life
- Rural life
- Nomad life

5) Potential Source of Infection _____

Part B: Admission details

1) Admission Date DD/MM/YYYY

_____

2) Diarrhea Onset before

_____ **days**

3) Clinical Presentation

- ☐ **Diarrhea**
  how many times in a day? _____.
- ☐ **Vomiting**
- ☐ **Abdominal cramps**
- ☐ **Fever**
- ☐ **Dehydration**
- ☐ **Other**
  If Other, Please Specify
  _____
  _____

4) Chief Complaint was

_____

_____

5) Assessment of severity of dehydration:

- **Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry, tears absent, Unable to drink, drinks poorly)**
- **Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)**
- **None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)**

Part D: Co-morbidities

1) Height _____ m

2) Weight _____ kg

3) Patient BMI_____ kg/m^2

4) Heart Rate _____

5) Blood Pressure _____

7) Shock Index (SI) (heart rate (HR) / systolic blood pressure (SBP)) _____

6) ASA Grade (chose number between 1 >>5)____

- ASA 1: Healthy person. Example: Fit, nonobese (BMI under 30), a nonsmoking patient with good exercise tolerance.
- ASA 2: well-controlled disease (e.g., treated hypertension, obesity with BMI under 35, frequent social drinker, or cigarette smoker).
- ASA 3: a severe systemic disease that is not life-threatening. (e.g., poorly treated hypertension or diabetes, morbid obesity, chronic renal failure).
- ASA 4: a severe systemic disease that is a constant threat to life.
- ASA 5: A moribund person who is not expected to survive without the intervention.

7) Comorbidities:

- ☐ Diabetes mellitus
- ☐ Hypertension requiring medication
- ☐ Ischemic heart disease
- ☐ Chronic obstructive pulmonary disease (COPD)
- ☐ Asthma
- ☐ Ulcer disease
- ☐ Known liver cirrhosis
- ☐ Deep Vein Thrombosis
- ☐ Urinary Tract infection
- ☐ Chronic immunosuppression
- ☐ Cerebrovascular accident
- ☐ Chronic kidney disease (on dialysis or GFR <30 mL/min/1.73m2)
- ☐ Others (18)

If other, please Specify

_____

8) Past history of COVID-19 infection (within the last 6 months)

- Yes
- No

Time gap between COVID-19 infection and Cholera Infection (in weeks): _____ Weeks

9) Previous open abdominal surgery/laparotomy
- Yes
- No

If Yes, please indicate the cause

_____

10) Past Gastrointestinal Surgery
- Yes
- No

If Yes, please indicate the Cause

_____

_____

11) Past Medicine History:
- ☐ Antacids
- ☐ Histamine receptor blockers
- ☐ Proton pump inhibitors (PPI)
- ☐ Antibiotics (within last month)

  If Yes, please specify Antibiotics Group

  _____

  _____
- ☐ Other

  _____

  _____

12) Current smoker within 1 year: (even with hookah)
- Active smoker
  - A daily smoker
  - An occasional smoker
- Ex-smoker
- Never smoked

13) Is the patient:
- Not drinking alcohol.
- Drinking alcohol in moderation (2 drinks or less in a day for men and 1 drink or less in a day for women)
- Binge Drinking (consuming 5 or more drinks (male), or 4 or more drinks (female), in about 2 hours.)
- Heavy Alcohol Use (binge drinking on 5 or more days in the past month.)

14) Cholera Vaccine
- Yes
- No

If yes, please specify the type of Vaccine

_____

Part E: Cholera Workup

1) Diagnosis was made according to:
- **Clinically (According to WHO: In an area with a noted cholera epidemic, a patient aged 5 years or older develops acute watery diarrhea, with or without vomiting)**
- **Biochemical confirmation and characterization of the isolate.**
- **Polymerase chain reaction (PCR) tests.**

2) If Biochemical confirmation and characterization of the isolate was done please tick all that apply
- ☐ **Stool Examination**
- ☐ **Stool Culture**
- ☐ **Serotyping and Biotyping**

  If done, Please specify the type

  _____

  _____
- ☐ **Hematologic Tests**
- ☐ **Metabolic Panel**

3) Laboratory findings (If done)
- Hemoglobin (g/dL) _____
- Platelet (10^3 /µL) _____
- Bilirubin Total (mg/dL) ____
- Bilirubin direct (mg/dL) ___
- AST (U/L) _____
- ALT (U/L) _____
- Urea (mg/dL) _____
- Serum creatinine (mg/dL)__
- Alkaline phosphatase _____
- White blood cell count, 10^9/L _____
- K+ _____
- Na+ _____
- HCO3- _____
- PCo2 _____
- Ph _____
- Glucose _____
- Blood type (ABO +/-) _____

Part F: Treatment & Management

1) Intravenous Rehydration
- **Yes**
- **No**

If yes, please set the volume of intravenous infusion at the day case

_____

_____ml/day case. (example: 2000 ml / day case)

Set the rate of Intravenous Rehydration

_____

_____

_____ml/kg in hours (example; 30ml/kg in first hour then 70 ml / kg in next five hours)

Type of solution
- **Lactated Ringer solution.**
- **Isotonic sodium chloride solution**
- **Other _____**

2) ORS rehydration:

- **Yes**
- **No**

If yes, please set the volume of ORS Solution at the day case

_____

_____ml/day case. (example: 2000 ml / day case)

Set the rate of Intravenous Rehydration

_____

_____ml/kg in hours (example; 30ml/kg after each loose stool then 70 ml / kg in next five hours)

3) Antibiotic treatment

- **Yes**
- **No**

If yes, please specify

- **Tetracycline**
- **Doxycycline**
- **Trimethoprim and sulfamethoxazole**
- **Furazolidone**
- **Ciprofloxacin**
- **Ampicillin**
- **Other _____**

Dose

- **Single dose**
- **Multiple dose**

_____ (for example 60 mg / once a day)

4) Sodium Bicarbonate

- **Yes**
- **No**

If yes, please specify the reason

_____

_____

5) Potassium supplementation

- **Yes**
  - **Oral potassium supplementation**
  - **Intravenous potassium replacement**
  - **Potassium-sparing diuretics**
- **No**

If yes, please specify the reason

_____

Part G: Follow-up Data at Staying in hospital

1) Patient Discharge

- **Same day with admission**
- **Next day**
- **After _____ days (example after two days)**

2) Did the patient die?

- **Yes**
- **No**

If yes, please specify the reason

_____

_____

3) Patient Health at discharge

- **Good**
- **Moderate**
- **Bad**

4) Did the patient need ICU care?

- **Yes**
- **No**

If Yes, please describe the reason

_____

_____

5) Did the patient need dialysis

- **Yes**
- **No**

If yes, please specify the reason

_____

_____

Did the patient have any complication through staying at hospital?

- **Yes**
- **No**

If yes, please specify

_____

_____

Part H: Follow-up Data during 30 days

1) Did the patient have any complication through 30 days after the discharge?

- Yes
- No

If yes, please specify _____

2) Did the patient die as a result of a complication?

- Yes
- No

If Yes, please specify the reason

_____

_____

3) Any additional pharmacological treatment instituted by the medical team after discharge at home (other than routine treatment and prescription at discharge)

- Yes
- No

If Yes, please specify

_____

_____

4) Patient Health after 30 days from the admission:

- Good
- Moderate
- Bad

Any Additional Notes: _____

Supplementary File B Subgroup's analysis

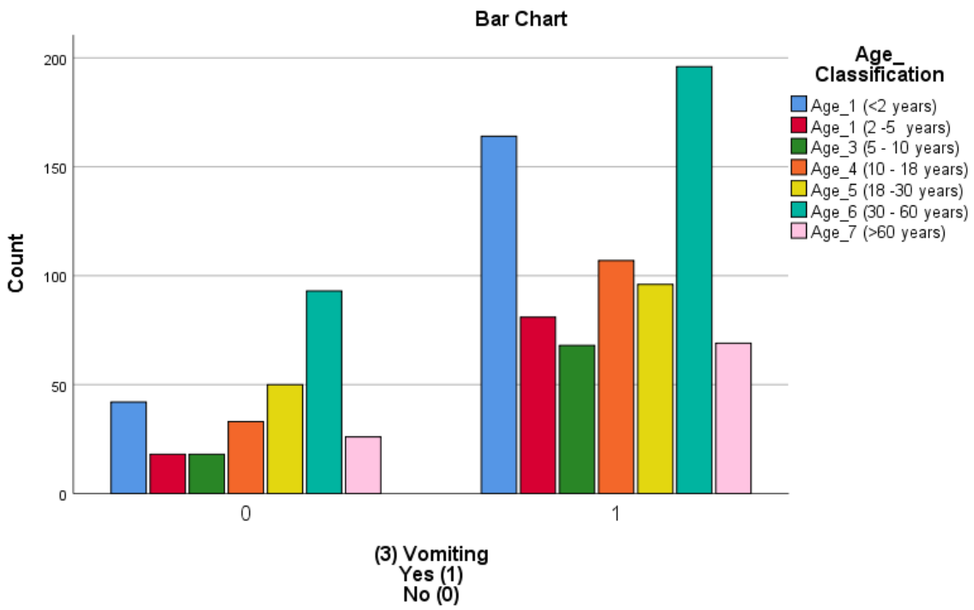
Symptoms and laboratory findings according to age Class

(3) Vomiting
Yes (1)
No (0)

*** Age_ Classification Crosstabulation**

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
(3) Vomiting Yes (1) No (0)	0	Count	42	18	18	33	50	93	26	280
		% within (3) Vomiting Yes (1) No (0)	15.0%	6.4%	6.4%	11.8%	17.9%	33.2%	9.3%	100.0%
		% within Age_ Classification	20.4%	18.2%	20.9%	23.6%	34.2%	32.2%	27.4%	26.4%
		% of Total	4.0%	1.7%	1.7%	3.1%	4.7%	8.8%	2.5%	26.4%
	1	Count	164	81	68	107	96	196	69	781
		% within (3) Vomiting Yes (1) No (0)	21.0%	10.4%	8.7%	13.7%	12.3%	25.1%	8.8%	100.0%
		% within Age_ Classification	79.6%	81.8%	79.1%	76.4%	65.8%	67.8%	72.6%	73.6%
		% of Total	15.5%	7.6%	6.4%	10.1%	9.0%	18.5%	6.5%	73.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within (3) Vomiting Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%

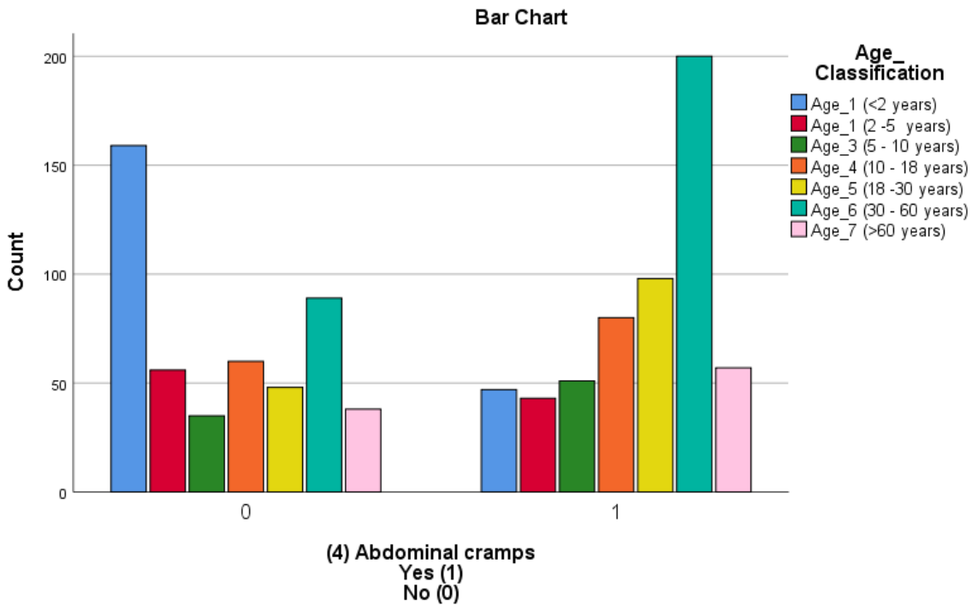
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(4) Abdominal cramps
Yes (1)
No (0) * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
(4) Abdominal cramps Yes (1) No (0)	0	Count	159	56	35	60	48	89	38	485
		% within (4) Abdominal cramps Yes (1) No (0)	32.8%	11.5%	7.2%	12.4%	9.9%	18.4%	7.8%	100.0%
		% within Age_ Classification	77.2%	56.6%	40.7%	42.9%	32.9%	30.8%	40.0%	45.7%
		% of Total	15.0%	5.3%	3.3%	5.7%	4.5%	8.4%	3.6%	45.7%
	1	Count	47	43	51	80	98	200	57	576
		% within (4) Abdominal cramps Yes (1) No (0)	8.2%	7.5%	8.9%	13.9%	17.0%	34.7%	9.9%	100.0%

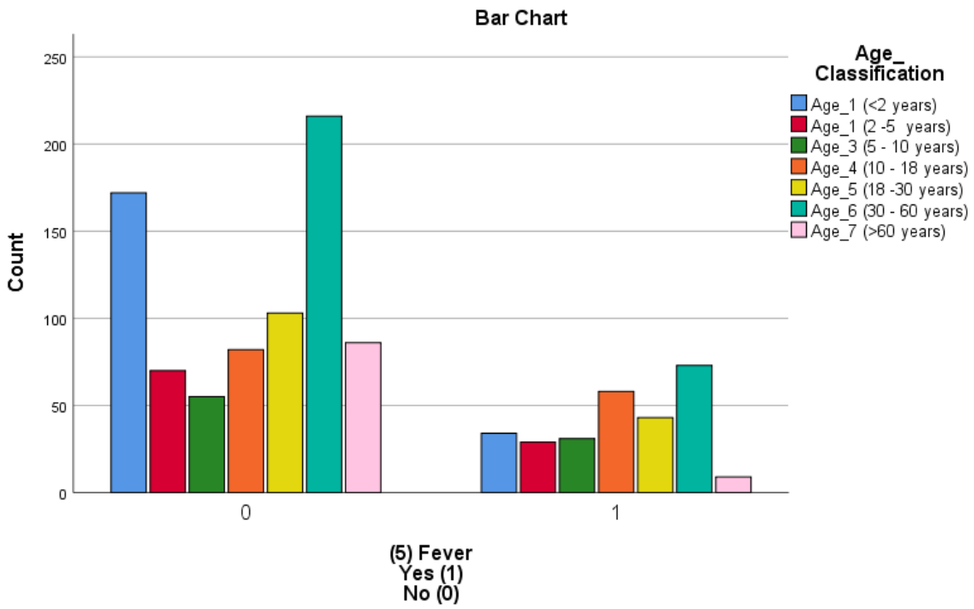
	% within Age_ Classification	22.8%	43.4%	59.3%	57.1%	67.1%	69.2%	60.0%	54.3%
	% of Total	4.4%	4.1%	4.8%	7.5%	9.2%	18.9%	5.4%	54.3%
Total	Count	206	99	86	140	146	289	95	1061
	% within (4) Abdominal cramps Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(5) Fever Yes (1) No (0) * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_ 1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_ 7 (>60 years)	Total
(5) Fever Yes (1) No (0)	0	Count	172	70	55	82	103	216	86	784
		% within (5) Fever Yes (1) No (0)	21.9%	8.9%	7.0%	10.5%	13.1%	27.6%	11.0%	100.0%

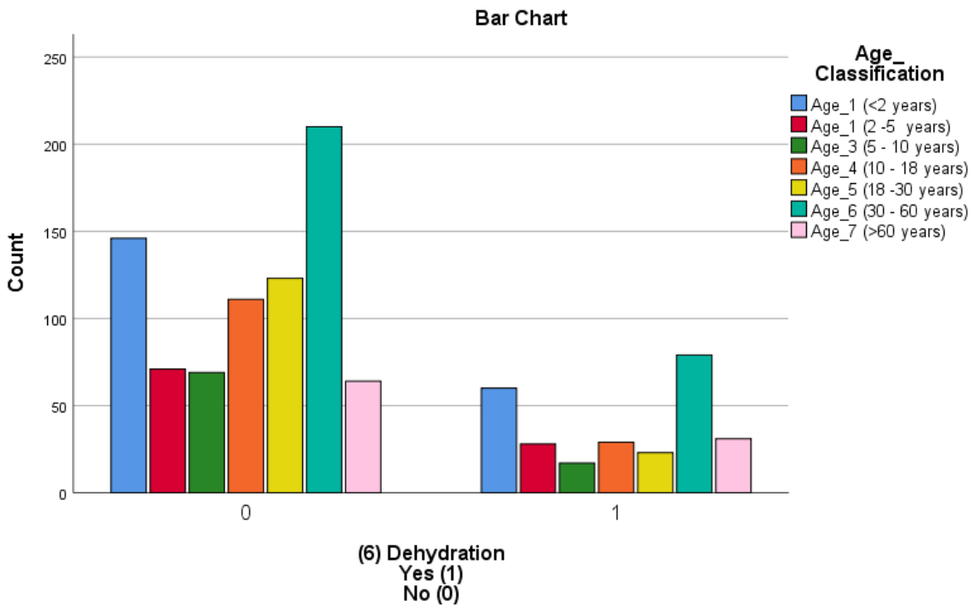
		% within Age_ Classification	83.5%	70.7%	64.0%	58.6%	70.5%	74.7%	90.5%	73.9%
		% of Total	16.2%	6.6%	5.2%	7.7%	9.7%	20.4%	8.1%	73.9%
	1	Count	34	29	31	58	43	73	9	277
		% within (5) Fever Yes (1) No (0)	12.3%	10.5%	11.2%	20.9%	15.5%	26.4%	3.2%	100.0%
		% within Age_ Classification	16.5%	29.3%	36.0%	41.4%	29.5%	25.3%	9.5%	26.1%
		% of Total	3.2%	2.7%	2.9%	5.5%	4.1%	6.9%	0.8%	26.1%
Total		Count	206	99	86	140	146	289	95	1061
		% within (5) Fever Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(6) Dehydration Yes (1) No (0) * Age_ Classification Crosstabulation

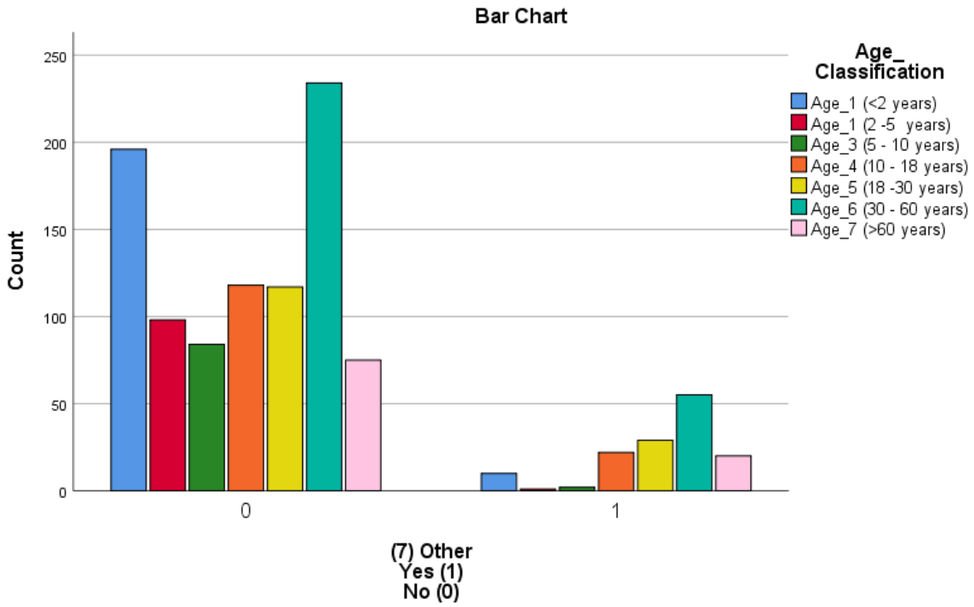
		Age_ Classification							Total

			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	
(6) Dehydration Yes (1) No (0)	0	Count	146	71	69	111	123	210	64	794
		% within (6) Dehydration Yes (1) No (0)	18.4%	8.9%	8.7%	14.0%	15.5%	26.4%	8.1%	100.0%
		% within Age_ Classification	70.9%	71.7%	80.2%	79.3%	84.2%	72.7%	67.4%	74.8%
		% of Total	13.8%	6.7%	6.5%	10.5%	11.6%	19.8%	6.0%	74.8%
	1	Count	60	28	17	29	23	79	31	267
		% within (6) Dehydration Yes (1) No (0)	22.5%	10.5%	6.4%	10.9%	8.6%	29.6%	11.6%	100.0%
		% within Age_ Classification	29.1%	28.3%	19.8%	20.7%	15.8%	27.3%	32.6%	25.2%
		% of Total	5.7%	2.6%	1.6%	2.7%	2.2%	7.4%	2.9%	25.2%
Total		Count	206	99	86	140	146	289	95	1061
		% within (6) Dehydration Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(7) Other
Yes (1)
No (0) * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
(7) Other Yes (1) No (0)	0	Count	196	98	84	118	117	234	75	922
		% within (7) Other Yes (1) No (0)	21.3%	10.6%	9.1%	12.8%	12.7%	25.4%	8.1%	100.0%
		% within Age_ Classification	95.1%	99.0%	97.7%	84.3%	80.1%	81.0%	78.9%	86.9%
		% of Total	18.5%	9.2%	7.9%	11.1%	11.0%	22.1%	7.1%	86.9%
	1	Count	10	1	2	22	29	55	20	139
		% within (7) Other Yes (1) No (0)	7.2%	0.7%	1.4%	15.8%	20.9%	39.6%	14.4%	100.0%
		% within Age_ Classification	4.9%	1.0%	2.3%	15.7%	19.9%	19.0%	21.1%	13.1%
		% of Total	0.9%	0.1%	0.2%	2.1%	2.7%	5.2%	1.9%	13.1%
Total		Count	206	99	86	140	146	289	95	1061
		% within (7) Other Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



severity of dehydration

(1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly)

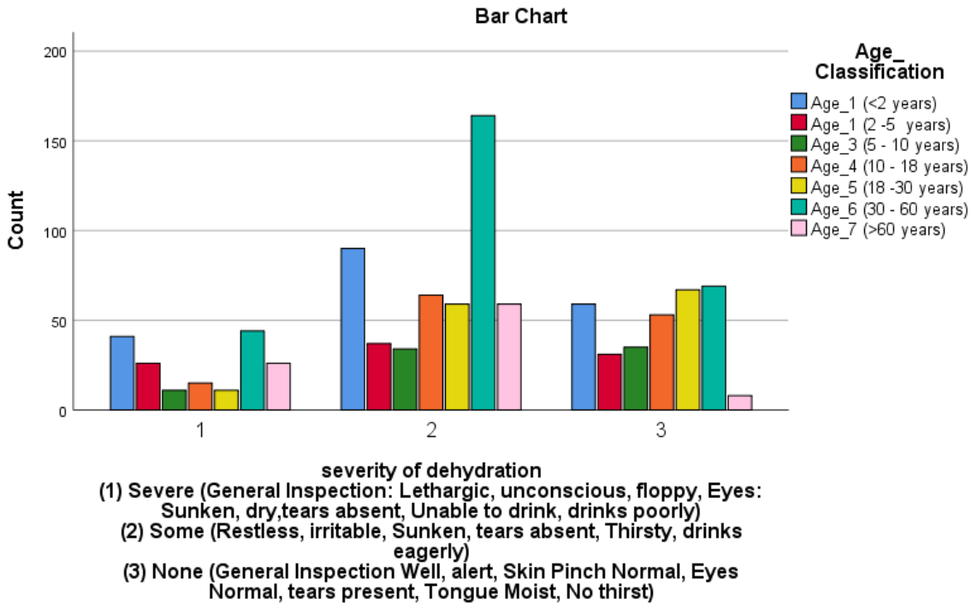
(2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)

(3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst) * Age_ Classification Crosstabulation

			Age_ Classification						
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
severity of dehydration	1	Count	41	26	11	15	11	44	26	174

(1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)		% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	23.6%	14.9%	6.3%	8.6%	6.3%	25.3%	14.9%	100.0%
		% within Age_ Classification	21.6%	27.7%	13.8%	11.4%	8.0%	15.9%	28.0%	17.3%
		% of Total	4.1%	2.6%	1.1%	1.5%	1.1%	4.4%	2.6%	17.3%
	2	Count	90	37	34	64	59	164	59	507
		% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	17.8%	7.3%	6.7%	12.6%	11.6%	32.3%	11.6%	100.0%
		% within Age_ Classification	47.4%	39.4%	42.5%	48.5%	43.1%	59.2%	63.4%	50.5%
		% of Total	9.0%	3.7%	3.4%	6.4%	5.9%	16.4%	5.9%	50.5%
	3	Count	59	31	35	53	67	69	8	322

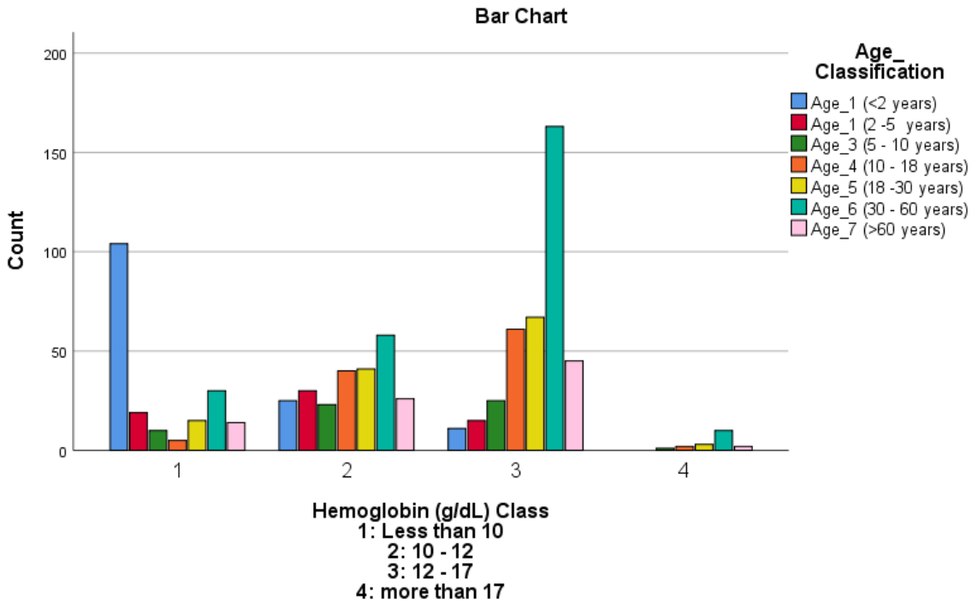
	% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	18.3%	9.6%	10.9%	16.5%	20.8%	21.4%	2.5%	100.0%
	% within Age_ Classification	31.1%	33.0%	43.8%	40.2%	48.9%	24.9%	8.6%	32.1%
	% of Total	5.9%	3.1%	3.5%	5.3%	6.7%	6.9%	0.8%	32.1%
Total	Count	190	94	80	132	137	277	93	1003
	% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	18.9%	9.4%	8.0%	13.2%	13.7%	27.6%	9.3%	100.0%
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	18.9%	9.4%	8.0%	13.2%	13.7%	27.6%	9.3%	100.0%



Hemoglobin (g/dL) Class
1: Less than 10
2: 10 - 12
3: 12 - 17
4: more than 17 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Hemoglobin (g/dL) Class	1	Count	104	19	10	5	15	30	14	197
1: Less than 10		% within Hemoglobin (g/dL) Class 1: Less than 10 2: 10 - 12 3: 12 - 17 4: more than 17	52.8%	9.6%	5.1%	2.5%	7.6%	15.2%	7.1%	100.0%
2: 10 - 12										
3: 12 - 17										
4: more than 17										
		% within Age_ Classification	74.3%	29.7%	16.9%	4.6%	11.9%	11.5%	16.1%	23.3%
		% of Total	12.3%	2.2%	1.2%	0.6%	1.8%	3.6%	1.7%	23.3%
	2	Count	25	30	23	40	41	58	26	243

		% within Hemoglobin (g/dL) Class	10.3%	12.3%	9.5%	16.5%	16.9%	23.9%	10.7%	100.0%
		1: Less than 10								
		2: 10 - 12								
		3: 12 - 17								
		4: more than 17								
		% within Age_ Classification	17.9%	46.9%	39.0%	37.0%	32.5%	22.2%	29.9%	28.8%
		% of Total	3.0%	3.6%	2.7%	4.7%	4.9%	6.9%	3.1%	28.8%
	3	Count	11	15	25	61	67	163	45	387
		% within Hemoglobin (g/dL) Class	2.8%	3.9%	6.5%	15.8%	17.3%	42.1%	11.6%	100.0%
		1: Less than 10								
		2: 10 - 12								
		3: 12 - 17								
		4: more than 17								
		% within Age_ Classification	7.9%	23.4%	42.4%	56.5%	53.2%	62.5%	51.7%	45.8%
		% of Total	1.3%	1.8%	3.0%	7.2%	7.9%	19.3%	5.3%	45.8%
	4	Count	0	0	1	2	3	10	2	18
		% within Hemoglobin (g/dL) Class	0.0%	0.0%	5.6%	11.1%	16.7%	55.6%	11.1%	100.0%
		1: Less than 10								
		2: 10 - 12								
		3: 12 - 17								
		4: more than 17								
		% within Age_ Classification	0.0%	0.0%	1.7%	1.9%	2.4%	3.8%	2.3%	2.1%
		% of Total	0.0%	0.0%	0.1%	0.2%	0.4%	1.2%	0.2%	2.1%
Total		Count	140	64	59	108	126	261	87	845
		% within Hemoglobin (g/dL) Class	16.6%	7.6%	7.0%	12.8%	14.9%	30.9%	10.3%	100.0%
		1: Less than 10								
		2: 10 - 12								
		3: 12 - 17								
		4: more than 17								
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.6%	7.0%	12.8%	14.9%	30.9%	10.3%	100.0%

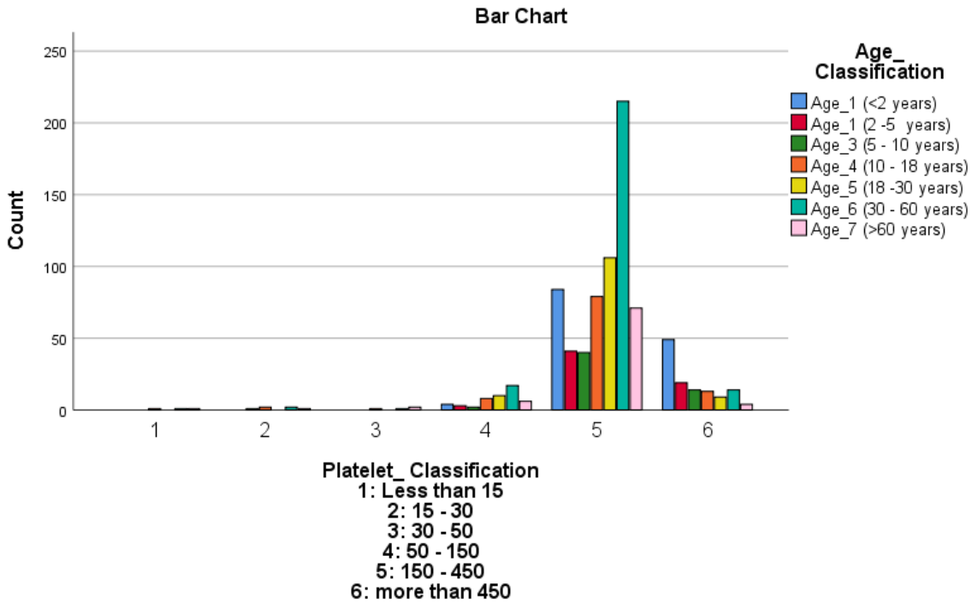


Platelet_ Classification
1: Less than 15
2: 15 - 30
3: 30 - 50
4: 50 - 150
5: 150 - 450
6: more than 450 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Platelet_ Classification	1	Count	0	0	0	1	0	1	1	3
1: Less than 15		% within Platelet_ Classification	0.0%	0.0%	0.0%	33.3%	0.0%	33.3%	33.3%	100.0%
2: 15 - 30		1: Less than 15								
3: 30 - 50		2: 15 - 30								
4: 50 - 150		3: 30 - 50								
5: 150 - 450		4: 50 - 150								
6: more than 450		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	0.0%	0.0%	0.0%	1.0%	0.0%	0.4%	1.2%	0.4%

		% of Total	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.4%
	2	Count	0	0	1	2	0	2	1	6
		% within Platelet_ Classification	0.0%	0.0%	16.7%	33.3%	0.0%	33.3%	16.7%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	0.0%	0.0%	1.8%	1.9%	0.0%	0.8%	1.2%	0.7%
		% of Total	0.0%	0.0%	0.1%	0.2%	0.0%	0.2%	0.1%	0.7%
	3	Count	0	0	0	1	0	1	2	4
		% within Platelet_ Classification	0.0%	0.0%	0.0%	25.0%	0.0%	25.0%	50.0%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	0.0%	0.0%	0.0%	1.0%	0.0%	0.4%	2.4%	0.5%
		% of Total	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.5%
	4	Count	4	3	2	8	10	17	6	50
		% within Platelet_ Classification	8.0%	6.0%	4.0%	16.0%	20.0%	34.0%	12.0%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	2.9%	4.8%	3.5%	7.7%	8.0%	6.8%	7.1%	6.1%
		% of Total	0.5%	0.4%	0.2%	1.0%	1.2%	2.1%	0.7%	6.1%
	5	Count	84	41	40	79	106	215	71	636
		% within Platelet_ Classification	13.2%	6.4%	6.3%	12.4%	16.7%	33.8%	11.2%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								

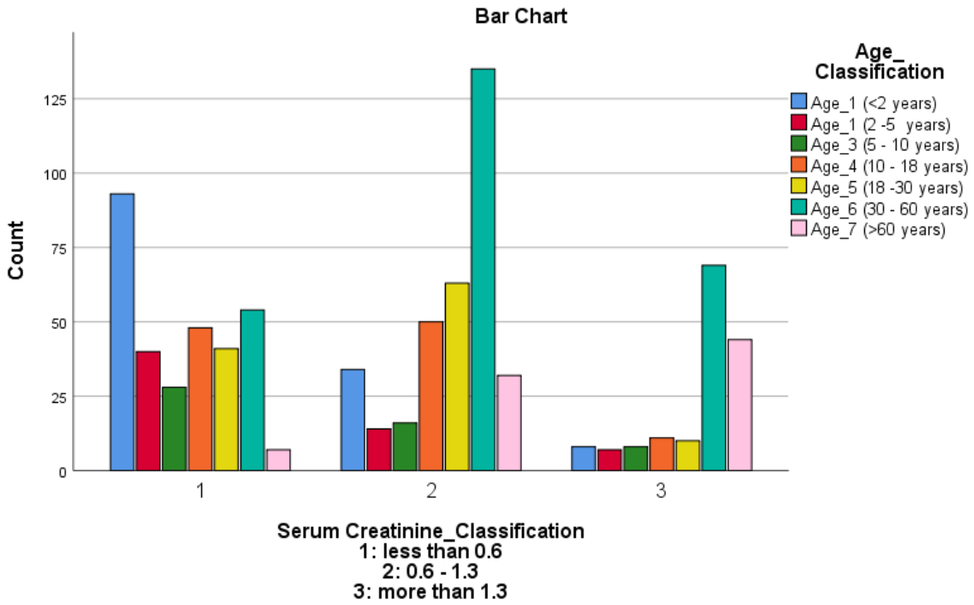
		% within Age_ Classification	61.3%	65.1%	70.2%	76.0%	84.8%	86.0%	83.5%	77.5%
		% of Total	10.2%	5.0%	4.9%	9.6%	12.9%	26.2%	8.6%	77.5%
	6	Count	49	19	14	13	9	14	4	122
		% within Platelet_ Classification	40.2%	15.6%	11.5%	10.7%	7.4%	11.5%	3.3%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	35.8%	30.2%	24.6%	12.5%	7.2%	5.6%	4.7%	14.9%
		% of Total	6.0%	2.3%	1.7%	1.6%	1.1%	1.7%	0.5%	14.9%
Total		Count	137	63	57	104	125	250	85	821
		% within Platelet_ Classification	16.7%	7.7%	6.9%	12.7%	15.2%	30.5%	10.4%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.7%	7.7%	6.9%	12.7%	15.2%	30.5%	10.4%	100.0%



Serum Creatinine_Classification
1: less than 0.6
2: 0.6 - 1.3
3: more than 1.3 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	1	Count	93	40	28	48	41	54	7	311
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	29.9%	12.9%	9.0%	15.4%	13.2%	17.4%	2.3%	100.0%
		% within Age_ Classification	68.9%	65.6%	53.8%	44.0%	36.0%	20.9%	8.4%	38.3%
		% of Total	11.5%	4.9%	3.4%	5.9%	5.0%	6.7%	0.9%	38.3%
	2	Count	34	14	16	50	63	135	32	344

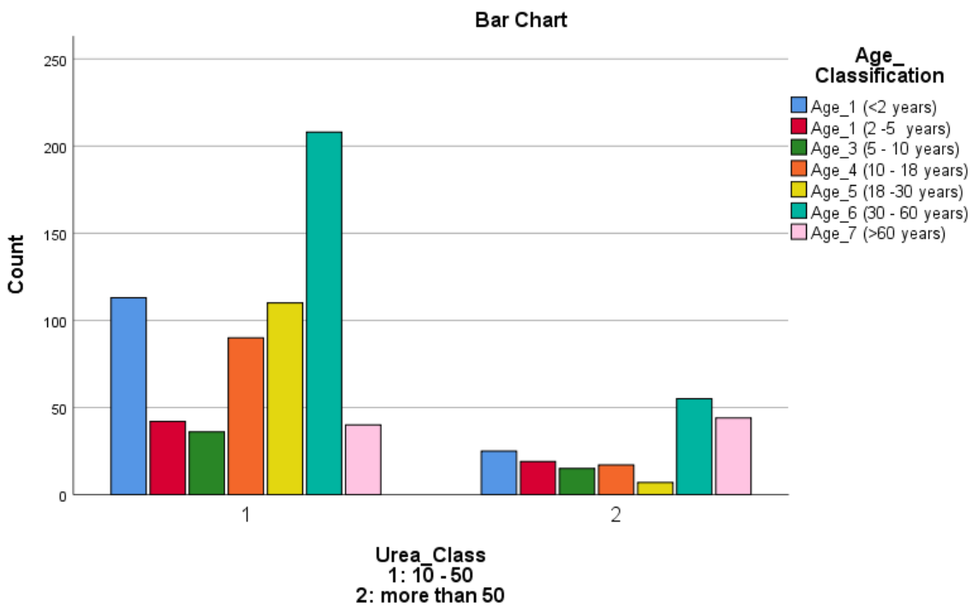
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	9.9%	4.1%	4.7%	14.5%	18.3%	39.2%	9.3%	100.0%
		% within Age_ Classification	25.2%	23.0%	30.8%	45.9%	55.3%	52.3%	38.6%	42.4%
		% of Total	4.2%	1.7%	2.0%	6.2%	7.8%	16.6%	3.9%	42.4%
	3	Count	8	7	8	11	10	69	44	157
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	5.1%	4.5%	5.1%	7.0%	6.4%	43.9%	28.0%	100.0%
		% within Age_ Classification	5.9%	11.5%	15.4%	10.1%	8.8%	26.7%	53.0%	19.3%
		% of Total	1.0%	0.9%	1.0%	1.4%	1.2%	8.5%	5.4%	19.3%
Total		Count	135	61	52	109	114	258	83	812
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	16.6%	7.5%	6.4%	13.4%	14.0%	31.8%	10.2%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.5%	6.4%	13.4%	14.0%	31.8%	10.2%	100.0%



Urea_Class
1: 10 - 50
2: more than 50 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Urea_Class	1	Count	113	42	36	90	110	208	40	639
1: 10 - 50		% within Urea_Class 1: 10 - 50 2: more than 50	17.7%	6.6%	5.6%	14.1%	17.2%	32.6%	6.3%	100.0%
2: more than 50		% within Age_ Classification	81.9%	68.9%	70.6%	84.1%	94.0%	79.1%	47.6%	77.8%
		% of Total	13.8%	5.1%	4.4%	11.0%	13.4%	25.3%	4.9%	77.8%
	2	Count	25	19	15	17	7	55	44	182
		% within Urea_Class 1: 10 - 50 2: more than 50	13.7%	10.4%	8.2%	9.3%	3.8%	30.2%	24.2%	100.0%
		% within Age_ Classification	18.1%	31.1%	29.4%	15.9%	6.0%	20.9%	52.4%	22.2%
		% of Total	3.0%	2.3%	1.8%	2.1%	0.9%	6.7%	5.4%	22.2%
Total		Count	138	61	51	107	117	263	84	821

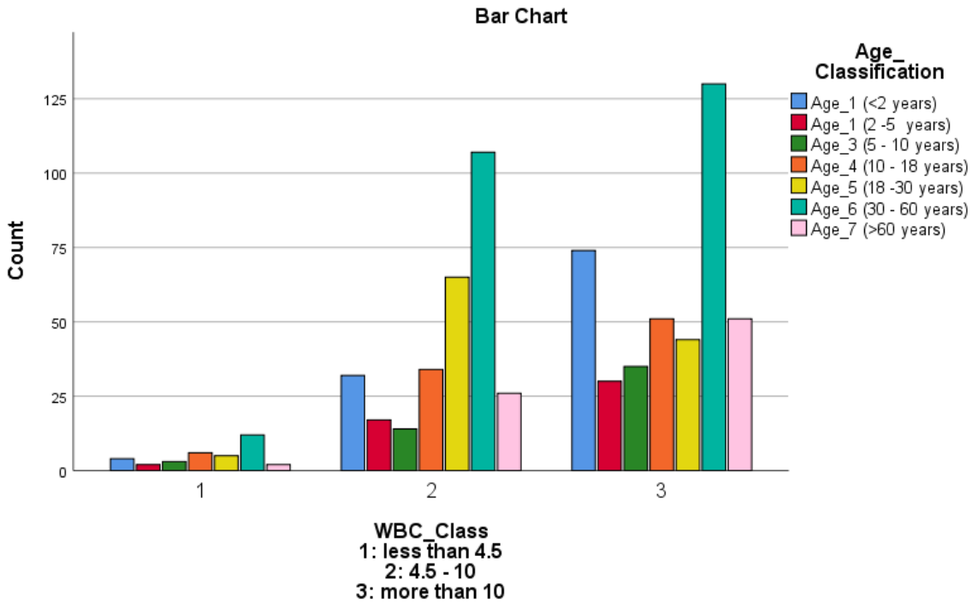
		% within Urea_Class 1: 10 - 50 2: more than 50	16.8%	7.4%	6.2%	13.0%	14.3%	32.0%	10.2%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.8%	7.4%	6.2%	13.0%	14.3%	32.0%	10.2%	100.0%



WBC_Class
1: less than 4.5
2: 4.5 - 10
3: more than 10 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_ 1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_ 7 (>60 years)	Total
WBC_Class 1: less than 4.5 2: 4.5 - 10 3: more than 10	1	Count	4	2	3	6	5	12	2	34
		% within WBC_Class 1: less than 4.5 2: 4.5 - 10 3: more than 10	11.8%	5.9%	8.8%	17.6%	14.7%	35.3%	5.9%	100.0%
		% within Age_ Classification	3.6%	4.1%	5.8%	6.6%	4.4%	4.8%	2.5%	4.6%

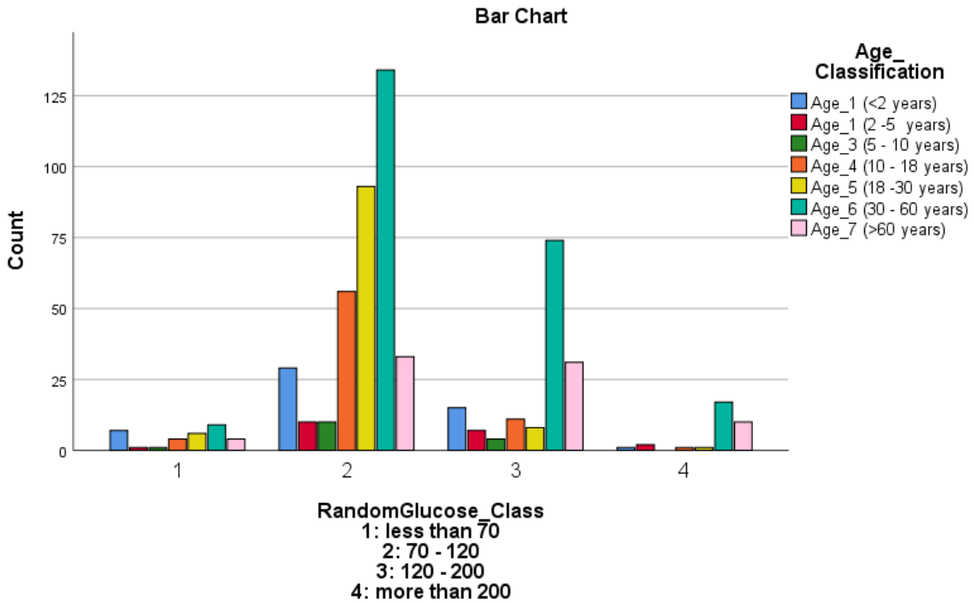
		% of Total	0.5%	0.3%	0.4%	0.8%	0.7%	1.6%	0.3%	4.6%
	2	Count	32	17	14	34	65	107	26	295
		% within WBC_Class	10.8%	5.8%	4.7%	11.5%	22.0%	36.3%	8.8%	100.0%
		1: less than 4.5								
		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	29.1%	34.7%	26.9%	37.4%	57.0%	43.0%	32.9%	39.7%
		% of Total	4.3%	2.3%	1.9%	4.6%	8.7%	14.4%	3.5%	39.7%
	3	Count	74	30	35	51	44	130	51	415
		% within WBC_Class	17.8%	7.2%	8.4%	12.3%	10.6%	31.3%	12.3%	100.0%
		1: less than 4.5								
		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	67.3%	61.2%	67.3%	56.0%	38.6%	52.2%	64.6%	55.8%
		% of Total	9.9%	4.0%	4.7%	6.9%	5.9%	17.5%	6.9%	55.8%
Total		Count	110	49	52	91	114	249	79	744
		% within WBC_Class	14.8%	6.6%	7.0%	12.2%	15.3%	33.5%	10.6%	100.0%
		1: less than 4.5								
		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.8%	6.6%	7.0%	12.2%	15.3%	33.5%	10.6%	100.0%



RandomGlucose_Class
1: less than 70
2: 70 - 120
3: 120 - 200
4: more than 200 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
RandomGlucose_Class	1	Count	7	1	1	4	6	9	4	32
1: less than 70		% within RandomGlucose_Class	21.9%	3.1%	3.1%	12.5%	18.8%	28.1%	12.5%	100.0%
2: 70 - 120		1: less than 70								
3: 120 - 200		2: 70 - 120								
4: more than 200		3: 120 - 200								
		4: more than 200								
		% within Age_ Classification	13.5%	5.0%	6.7%	5.6%	5.6%	3.8%	5.1%	5.5%
		% of Total	1.2%	0.2%	0.2%	0.7%	1.0%	1.6%	0.7%	5.5%
	2	Count	29	10	10	56	93	134	33	365

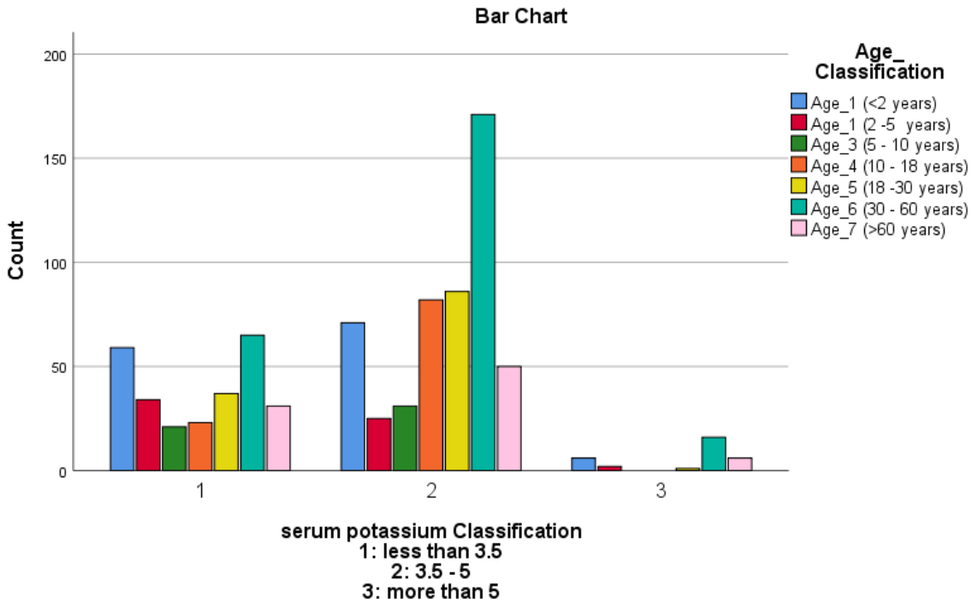
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	7.9%	2.7%	2.7%	15.3%	25.5%	36.7%	9.0%	100.0%
		% within Age_ Classification	55.8%	50.0%	66.7%	77.8%	86.1%	57.3%	42.3%	63.0%
		% of Total	5.0%	1.7%	1.7%	9.7%	16.1%	23.1%	5.7%	63.0%
	3	Count	15	7	4	11	8	74	31	150
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	10.0%	4.7%	2.7%	7.3%	5.3%	49.3%	20.7%	100.0%
		% within Age_ Classification	28.8%	35.0%	26.7%	15.3%	7.4%	31.6%	39.7%	25.9%
		% of Total	2.6%	1.2%	0.7%	1.9%	1.4%	12.8%	5.4%	25.9%
	4	Count	1	2	0	1	1	17	10	32
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	3.1%	6.3%	0.0%	3.1%	3.1%	53.1%	31.3%	100.0%
		% within Age_ Classification	1.9%	10.0%	0.0%	1.4%	0.9%	7.3%	12.8%	5.5%
		% of Total	0.2%	0.3%	0.0%	0.2%	0.2%	2.9%	1.7%	5.5%
Total		Count	52	20	15	72	108	234	78	579
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	9.0%	3.5%	2.6%	12.4%	18.7%	40.4%	13.5%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	9.0%	3.5%	2.6%	12.4%	18.7%	40.4%	13.5%	100.0%



serum potassium Classification
1: less than 3.5
2: 3.5 - 5
3: more than 5 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	1	Count	59	34	21	23	37	65	31	270
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	21.9%	12.6%	7.8%	8.5%	13.7%	24.1%	11.5%	100.0%
		% within Age_ Classification	43.4%	55.7%	40.4%	21.9%	29.8%	25.8%	35.6%	33.0%
		% of Total	7.2%	4.2%	2.6%	2.8%	4.5%	8.0%	3.8%	33.0%
	2	Count	71	25	31	82	86	171	50	516

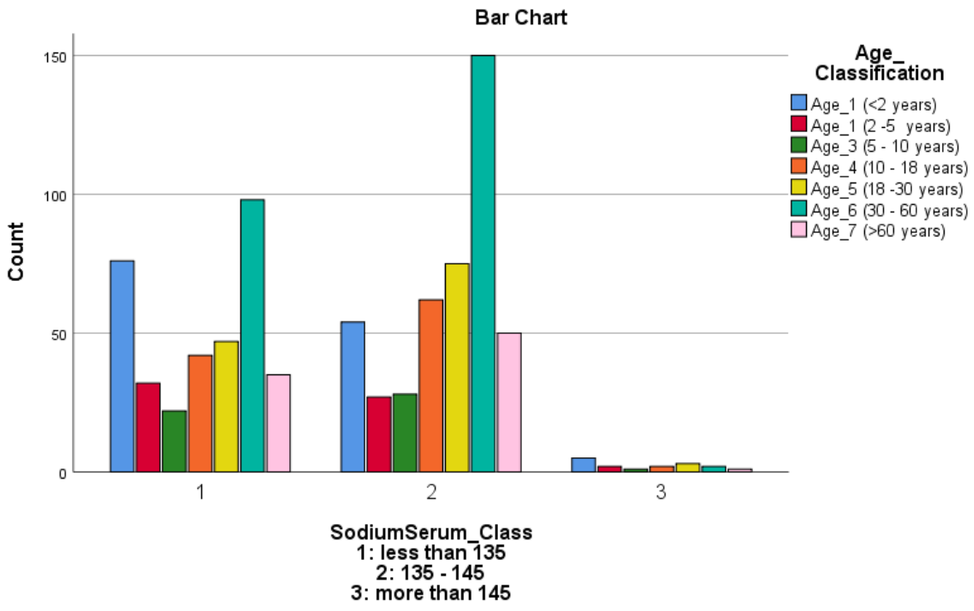
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	13.8%	4.8%	6.0%	15.9%	16.7%	33.1%	9.7%	100.0%
		% within Age_ Classification	52.2%	41.0%	59.6%	78.1%	69.4%	67.9%	57.5%	63.2%
		% of Total	8.7%	3.1%	3.8%	10.0%	10.5%	20.9%	6.1%	63.2%
	3	Count	6	2	0	0	1	16	6	31
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	19.4%	6.5%	0.0%	0.0%	3.2%	51.6%	19.4%	100.0%
		% within Age_ Classification	4.4%	3.3%	0.0%	0.0%	0.8%	6.3%	6.9%	3.8%
		% of Total	0.7%	0.2%	0.0%	0.0%	0.1%	2.0%	0.7%	3.8%
Total		Count	136	61	52	105	124	252	87	817
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	16.6%	7.5%	6.4%	12.9%	15.2%	30.8%	10.6%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.5%	6.4%	12.9%	15.2%	30.8%	10.6%	100.0%



SodiumSerum_Class
1: less than 135
2: 135 - 145
3: more than 145 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
SodiumSerum_Class	1	Count	76	32	22	42	47	98	35	352
1: less than 135		% within SodiumSerum_Class 1: less than 135	21.6%	9.1%	6.3%	11.9%	13.4%	27.8%	9.9%	100.0%
2: 135 - 145		% within Age_ Classification	56.3%	52.5%	43.1%	39.6%	37.6%	39.2%	40.7%	43.2%
3: more than 145		% of Total	9.3%	3.9%	2.7%	5.2%	5.8%	12.0%	4.3%	43.2%
	2	Count	54	27	28	62	75	150	50	446
		% within SodiumSerum_Class 1: less than 135	12.1%	6.1%	6.3%	13.9%	16.8%	33.6%	11.2%	100.0%

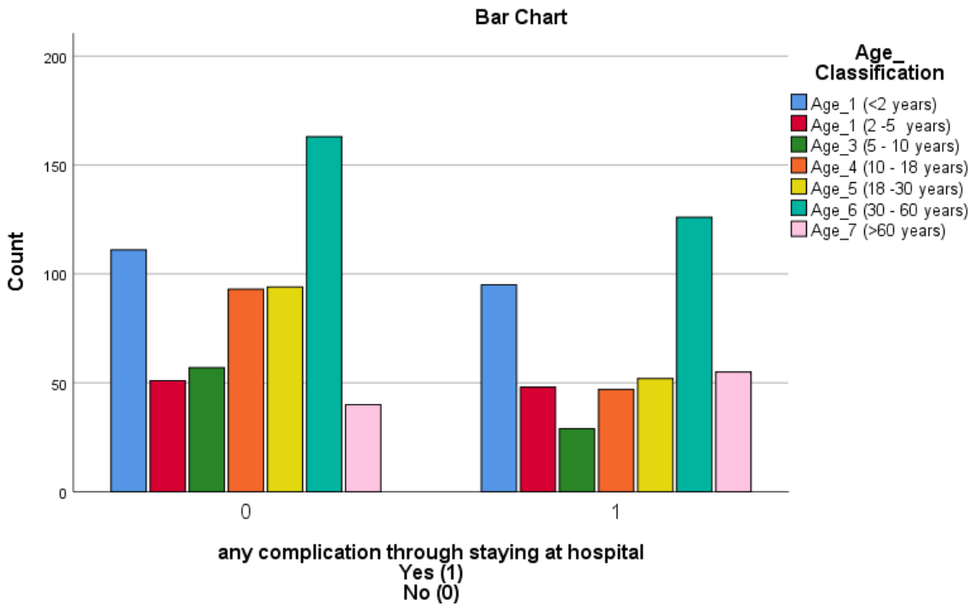
		% within Age_ Classification	40.0%	44.3%	54.9%	58.5%	60.0%	60.0%	58.1%	54.8%
		% of Total	6.6%	3.3%	3.4%	7.6%	9.2%	18.4%	6.1%	54.8%
	3	Count	5	2	1	2	3	2	1	16
		% within SodiumSerum_Class 1: less than 135 2: 135 - 145 3: more than 145	31.3%	12.5%	6.3%	12.5%	18.8%	12.5%	6.3%	100.0%
		% within Age_ Classification	3.7%	3.3%	2.0%	1.9%	2.4%	0.8%	1.2%	2.0%
		% of Total	0.6%	0.2%	0.1%	0.2%	0.4%	0.2%	0.1%	2.0%
Total		Count	135	61	51	106	125	250	86	814
		% within SodiumSerum_Class 1: less than 135 2: 135 - 145	16.6%	7.5%	6.3%	13.0%	15.4%	30.7%	10.6%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.5%	6.3%	13.0%	15.4%	30.7%	10.6%	100.0%



Complications according to age Class

any complication through staying at hospital Yes (1) No (0) * Age_ Classification Crosstabulation

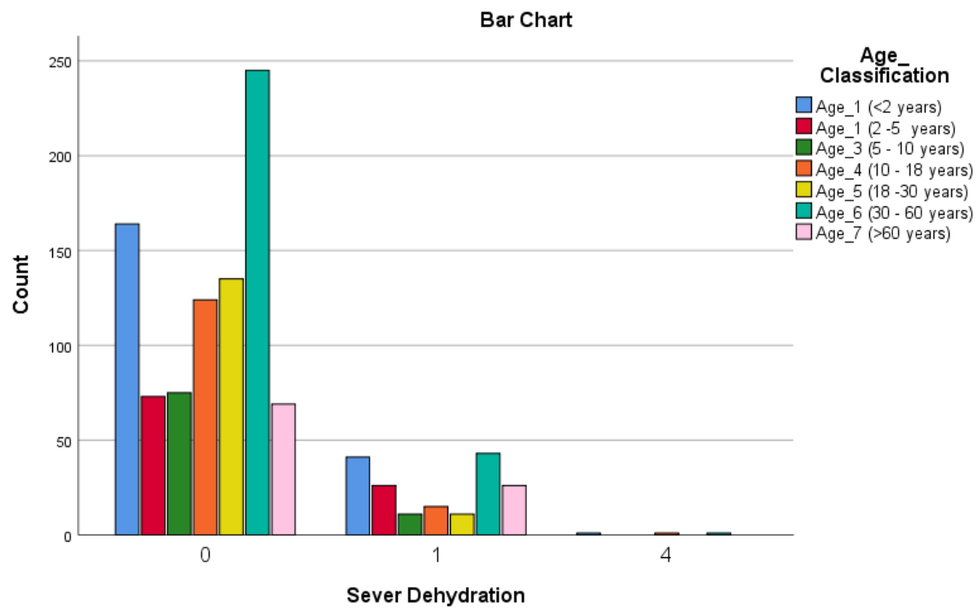
			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
any complication through staying at hospital Yes (1) No (0)	0	Count	111	51	57	93	94	163	40	609
		% within any complication through staying at hospital Yes (1) No (0)	18.2%	8.4%	9.4%	15.3%	15.4%	26.8%	6.6%	100.0%
		% within Age_ Classification	53.9%	51.5%	66.3%	66.4%	64.4%	56.4%	42.1%	57.4%
		% of Total	10.5%	4.8%	5.4%	8.8%	8.9%	15.4%	3.8%	57.4%
	1	Count	95	48	29	47	52	126	55	452
		% within any complication through staying at hospital Yes (1) No (0)	21.0%	10.6%	6.4%	10.4%	11.5%	27.9%	12.2%	100.0%
		% within Age_ Classification	46.1%	48.5%	33.7%	33.6%	35.6%	43.6%	57.9%	42.6%
		% of Total	9.0%	4.5%	2.7%	4.4%	4.9%	11.9%	5.2%	42.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within any complication through staying at hospital Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Sever Dehydration * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Sever Dehydration	0	Count	164	73	75	124	135	245	69	885
		% within Sever Dehydration	18.5%	8.2%	8.5%	14.0%	15.3%	27.7%	7.8%	100.0%
		% within Age_ Classification	79.6%	73.7%	87.2%	88.6%	92.5%	84.8%	72.6%	83.4%
		% of Total	15.5%	6.9%	7.1%	11.7%	12.7%	23.1%	6.5%	83.4%
	1	Count	41	26	11	15	11	43	26	173
		% within Sever Dehydration	23.7%	15.0%	6.4%	8.7%	6.4%	24.9%	15.0%	100.0%
		% within Age_ Classification	19.9%	26.3%	12.8%	10.7%	7.5%	14.9%	27.4%	16.3%
		% of Total	3.9%	2.5%	1.0%	1.4%	1.0%	4.1%	2.5%	16.3%
	4	Count	1	0	0	1	0	1	0	3
		% within Sever Dehydration	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	100.0%
		% within Age_ Classification	0.5%	0.0%	0.0%	0.7%	0.0%	0.3%	0.0%	0.3%
		% of Total	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.3%
Total		Count	206	99	86	140	146	289	95	1061
		% within Sever Dehydration	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%

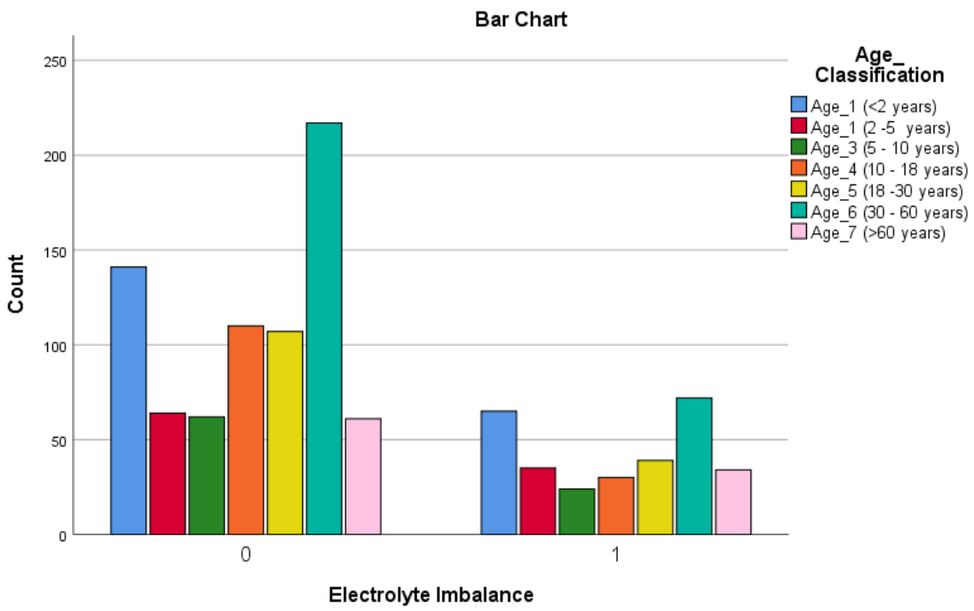
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Electrolyte Imbalance * Age_ Classification Crosstabulation

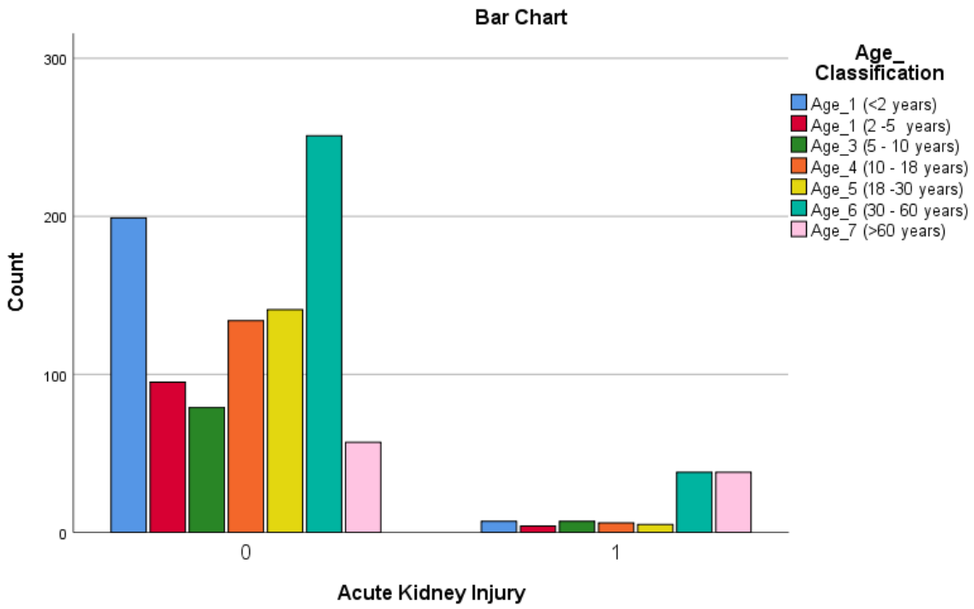
			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Electrolyte Imbalance	0	Count	141	64	62	110	107	217	61	762
		% within Electrolyte Imbalance	18.5%	8.4%	8.1%	14.4%	14.0%	28.5%	8.0%	100.0%
		% within Age_ Classification	68.4%	64.6%	72.1%	78.6%	73.3%	75.1%	64.2%	71.8%
		% of Total	13.3%	6.0%	5.8%	10.4%	10.1%	20.5%	5.7%	71.8%
	1	Count	65	35	24	30	39	72	34	299
		% within Electrolyte Imbalance	21.7%	11.7%	8.0%	10.0%	13.0%	24.1%	11.4%	100.0%
		% within Age_ Classification	31.6%	35.4%	27.9%	21.4%	26.7%	24.9%	35.8%	28.2%
		% of Total	6.1%	3.3%	2.3%	2.8%	3.7%	6.8%	3.2%	28.2%
Total		Count	206	99	86	140	146	289	95	1061
		% within Electrolyte Imbalance	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



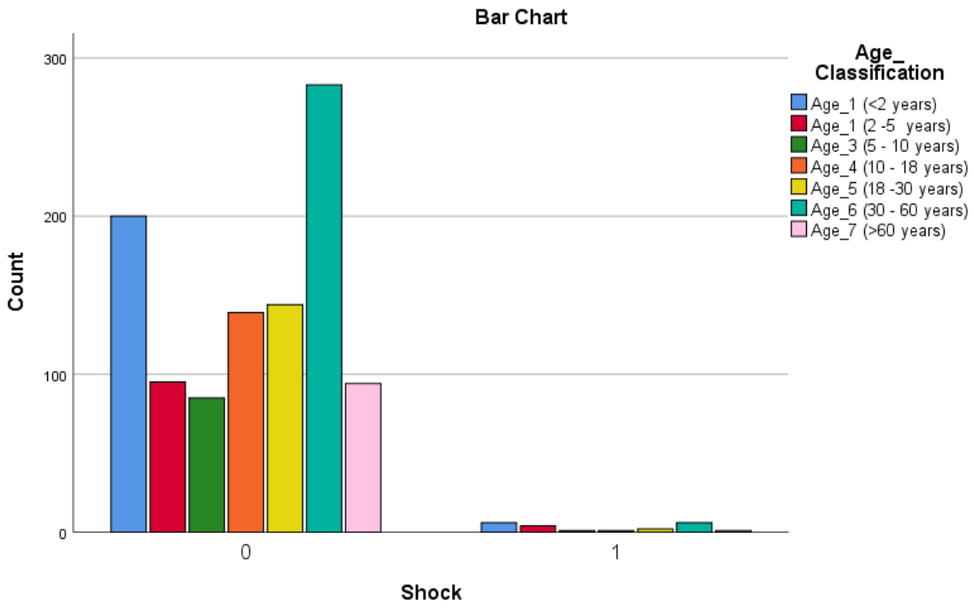
Acute Kidney Injury * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Acute Kidney Injury	0	Count	199	95	79	134	141	251	57	956
		% within Acute Kidney Injury	20.8%	9.9%	8.3%	14.0%	14.7%	26.3%	6.0%	100.0%
		% within Age_ Classification	96.6%	96.0%	91.9%	95.7%	96.6%	86.9%	60.0%	90.1%
		% of Total	18.8%	9.0%	7.4%	12.6%	13.3%	23.7%	5.4%	90.1%
	1	Count	7	4	7	6	5	38	38	105
		% within Acute Kidney Injury	6.7%	3.8%	6.7%	5.7%	4.8%	36.2%	36.2%	100.0%
		% within Age_ Classification	3.4%	4.0%	8.1%	4.3%	3.4%	13.1%	40.0%	9.9%
		% of Total	0.7%	0.4%	0.7%	0.6%	0.5%	3.6%	3.6%	9.9%
Total		Count	206	99	86	140	146	289	95	1061
		% within Acute Kidney Injury	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



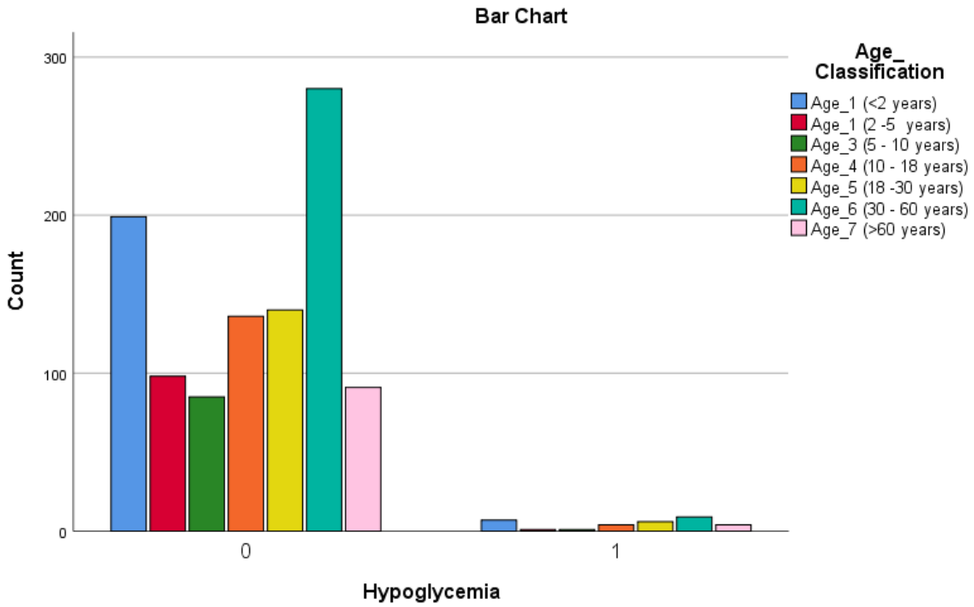
Shock * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Shock	0	Count	200	95	85	139	144	283	94	1040
		% within Shock	19.2%	9.1%	8.2%	13.4%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	97.1%	96.0%	98.8%	99.3%	98.6%	97.9%	98.9%	98.0%
		% of Total	18.9%	9.0%	8.0%	13.1%	13.6%	26.7%	8.9%	98.0%
	1	Count	6	4	1	1	2	6	1	21
		% within Shock	28.6%	19.0%	4.8%	4.8%	9.5%	28.6%	4.8%	100.0%
		% within Age_ Classification	2.9%	4.0%	1.2%	0.7%	1.4%	2.1%	1.1%	2.0%
		% of Total	0.6%	0.4%	0.1%	0.1%	0.2%	0.6%	0.1%	2.0%
Total		Count	206	99	86	140	146	289	95	1061
		% within Shock	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



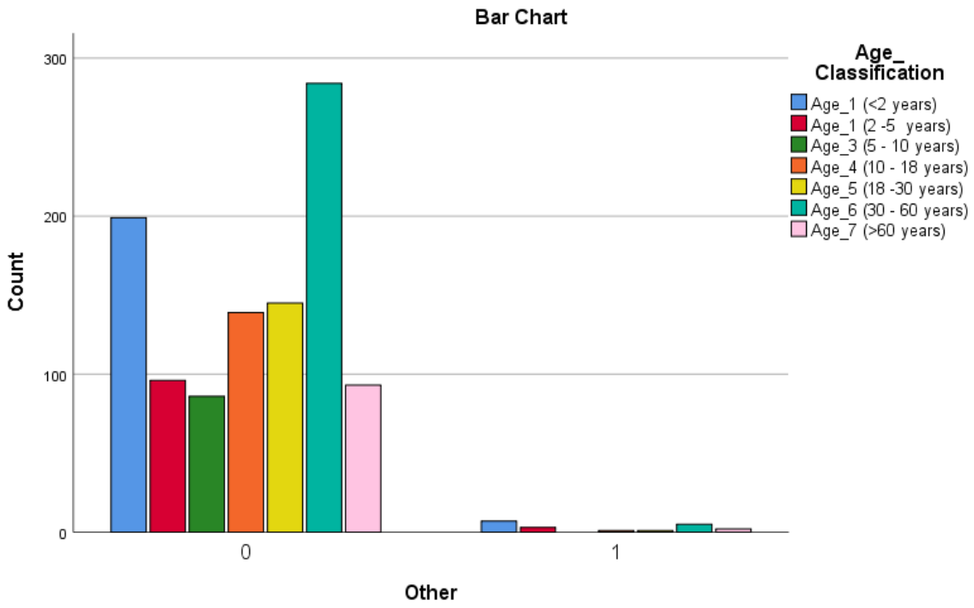
Hypoglycemia * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Hypoglycemia	0	Count	199	98	85	136	140	280	91	1029
		% within Hypoglycemia	19.3%	9.5%	8.3%	13.2%	13.6%	27.2%	8.8%	100.0%
		% within Age_ Classification	96.6%	99.0%	98.8%	97.1%	95.9%	96.9%	95.8%	97.0%
		% of Total	18.8%	9.2%	8.0%	12.8%	13.2%	26.4%	8.6%	97.0%
	1	Count	7	1	1	4	6	9	4	32
		% within Hypoglycemia	21.9%	3.1%	3.1%	12.5%	18.8%	28.1%	12.5%	100.0%
		% within Age_ Classification	3.4%	1.0%	1.2%	2.9%	4.1%	3.1%	4.2%	3.0%
		% of Total	0.7%	0.1%	0.1%	0.4%	0.6%	0.8%	0.4%	3.0%
Total		Count	206	99	86	140	146	289	95	1061
		% within Hypoglycemia	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Other * Age_ Classification Crosstabulation

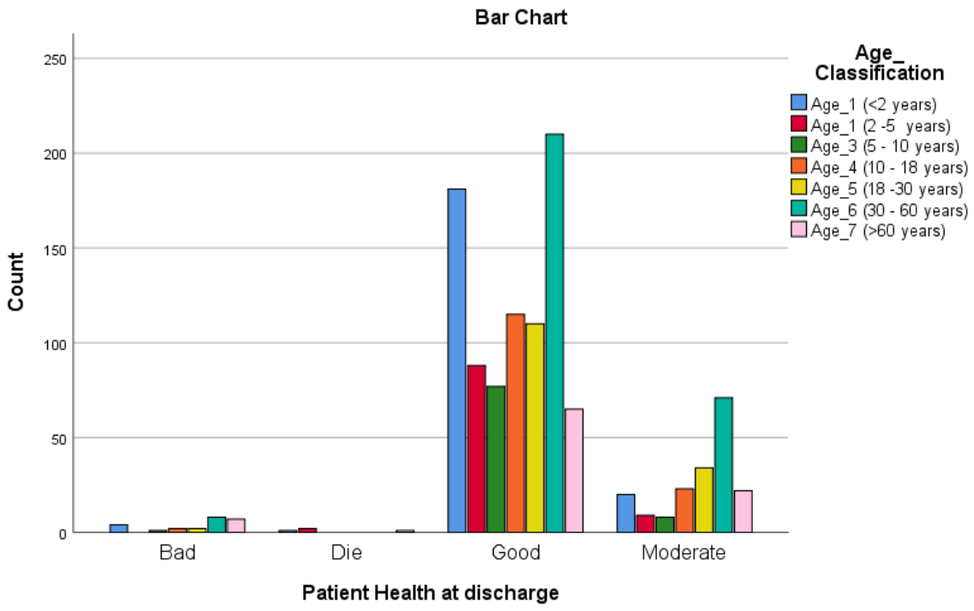
			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Other	0	Count	199	96	86	139	145	284	93	1042
		% within Other	19.1%	9.2%	8.3%	13.3%	13.9%	27.3%	8.9%	100.0%
		% within Age_ Classification	96.6%	97.0%	100.0%	99.3%	99.3%	98.3%	97.9%	98.2%
		% of Total	18.8%	9.0%	8.1%	13.1%	13.7%	26.8%	8.8%	98.2%
	1	Count	7	3	0	1	1	5	2	19
		% within Other	36.8%	15.8%	0.0%	5.3%	5.3%	26.3%	10.5%	100.0%
		% within Age_ Classification	3.4%	3.0%	0.0%	0.7%	0.7%	1.7%	2.1%	1.8%
		% of Total	0.7%	0.3%	0.0%	0.1%	0.1%	0.5%	0.2%	1.8%
Total		Count	206	99	86	140	146	289	95	1061
		% within Other	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Patient Health at discharge * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Patient Health at discharge	Bad	Count	4	0	1	2	2	8	7	24
		% within Patient Health at discharge	16.7%	0.0%	4.2%	8.3%	8.3%	33.3%	29.2%	100.0%
		% within Age_ Classification	1.9%	0.0%	1.2%	1.4%	1.4%	2.8%	7.4%	2.3%
		% of Total	0.4%	0.0%	0.1%	0.2%	0.2%	0.8%	0.7%	2.3%
	Die	Count	1	2	0	0	0	0	1	4
		% within Patient Health at discharge	25.0%	50.0%	0.0%	0.0%	0.0%	0.0%	25.0%	100.0%
		% within Age_ Classification	0.5%	2.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.4%
		% of Total	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%
	Good	Count	181	88	77	115	110	210	65	846
		% within Patient Health at discharge	21.4%	10.4%	9.1%	13.6%	13.0%	24.8%	7.7%	100.0%
		% within Age_ Classification	87.9%	88.9%	89.5%	82.1%	75.3%	72.7%	68.4%	79.7%
		% of Total	17.1%	8.3%	7.3%	10.8%	10.4%	19.8%	6.1%	79.7%

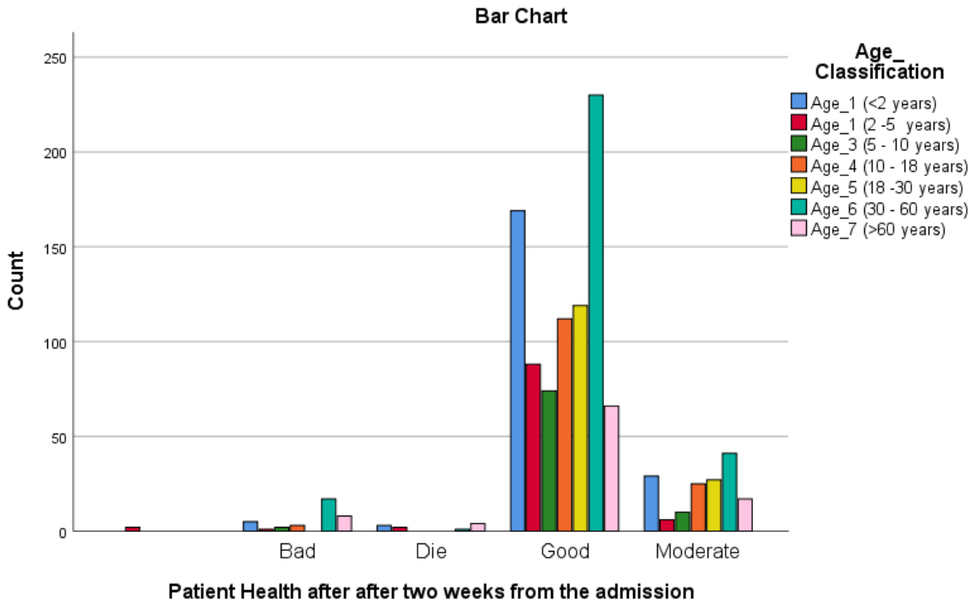
	Moderate	Count	20	9	8	23	34	71	22	187
		% within Patient Health at discharge	10.7%	4.8%	4.3%	12.3%	18.2%	38.0%	11.8%	100.0%
		% within Age_ Classification	9.7%	9.1%	9.3%	16.4%	23.3%	24.6%	23.2%	17.6%
		% of Total	1.9%	0.8%	0.8%	2.2%	3.2%	6.7%	2.1%	17.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within Patient Health at discharge	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Patient Health after two weeks - one month from the admission * Age_ Classification Crosstabulation

		Age_ Classification							
		Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Patient Health after after two weeks from the admission	Count	0	2	0	0	0	0	0	2
	% within Patient Health after two weeks from the admission	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

		% within Age_ Classification	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
		% of Total	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
	Bad	Count	5	1	2	3	0	17	8	36
		% within Patient Health after two weeks from the admission	13.9%	2.8%	5.6%	8.3%	0.0%	47.2%	22.2%	100.0%
		% within Age_ Classification	2.4%	1.0%	2.3%	2.1%	0.0%	5.9%	8.4%	3.4%
		% of Total	0.5%	0.1%	0.2%	0.3%	0.0%	1.6%	0.8%	3.4%
	Die	Count	3	2	0	0	0	1	4	10
		% within Patient Health after two weeks from the admission	30.0%	20.0%	0.0%	0.0%	0.0%	10.0%	40.0%	100.0%
		% within Age_ Classification	1.5%	2.0%	0.0%	0.0%	0.0%	0.3%	4.2%	0.9%
		% of Total	0.3%	0.2%	0.0%	0.0%	0.0%	0.1%	0.4%	0.9%
	Good	Count	169	88	74	112	119	230	66	858
		% within Patient Health after two weeks from the admission	19.7%	10.3%	8.6%	13.1%	13.9%	26.8%	7.7%	100.0%
		% within Age_ Classification	82.0%	88.9%	86.0%	80.0%	81.5%	79.6%	69.5%	80.9%
		% of Total	15.9%	8.3%	7.0%	10.6%	11.2%	21.7%	6.2%	80.9%
	Moderate	Count	29	6	10	25	27	41	17	155
		% within Patient Health after two weeks from the admission	18.7%	3.9%	6.5%	16.1%	17.4%	26.5%	11.0%	100.0%
		% within Age_ Classification	14.1%	6.1%	11.6%	17.9%	18.5%	14.2%	17.9%	14.6%
		% of Total	2.7%	0.6%	0.9%	2.4%	2.5%	3.9%	1.6%	14.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within Patient Health after two weeks from the admission	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1,2
Introduction			**3**
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			**4 , 5**
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	4
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4 , 5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	4
Study size	10	Explain how the study size was arrived at	4
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	5
		(*d*) If applicable, explain how loss to follow-up was addressed	5
		(*e*) Describe any sensitivity analyses	5
Results			5 , 6

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	5
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5
		(b) Indicate number of participants with missing data for each variable of interest	
		(c) Summarise follow-up time (eg, average and total amount)	
Outcome data	15*	Report numbers of outcome events or summary measures over time	5 , 6
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	5 , 6
		(*b*) Report category boundaries when continuous variables were categorized	
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	
Discussion			6
Key results	18	Summarise key results with reference to study objectives	
Limitations			3
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	
Other information			7
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	7

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Acute Watery Diarrhea Cases During Cholera Outbreak in Syria: A Cohort Study

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Abstract

Objectives: The aim of this study is a descriptive presentation of cases of acute watery diarrhea (AWD) that were presented to Aleppo University Hospital (AUH) during the recent cholera outbreak in Syria.

Design: Prospective, observational, cohort, study.

Setting and Participants: A total of 1061 AWD patients were admitted to AUH during the timeframe of September 20th, 2022, to October 20th, 2022. The data collection was done through a structured questionnaire. This includes comprehensive clinical observation, laboratory analyses, therapeutic interventions, and holistic case evaluations

Results: The analysis has revealed notable insights; A predominant proportion of patients (58.6%) were residents from urban areas, and 40.3% were residents from rural areas. Intriguingly, a diverse range of potential infection sources emerged from patient data within our hospital, including uncontrolled well water, vegetables, and fecal-oral transmission through contaminated street/fast food. At discharge, most patients were in good health (79.7%), followed by moderate health (17.6%) and poor health (2.3%), with a minimal percentage dying before discharge (0.4%). The most common complications reported at admission and during hospitalization included electrolyte imbalance (28.2%), followed by severe dehydration (16.3%). In the follow-up period, the majority of patients exhibited good health (81.0%). Older patients (>60 years) had poorer outcomes, with 8.4% having poor health and 4.2% death rate.

Conclusions: The study found results consistent with previous AWD outbreaks in developing countries like Yemen, Nigeria, and Lebanon. Preventative measures like improving water sanitation and hygiene practices are essential to prevent future outbreaks and ease the strain on healthcare systems. Therefore, future studies must investigate the risk factors that increase the spread and the severity of the disease and investigate the best management method.

Strengths and limitations

- The study conducted a thorough analysis of AWD cases at Aleppo University Hospital following the declaration of a cholera outbreak in Syria, providing valuable insights into the disease's impact and management.
- By encompassing all patients with AWD, regardless of age or admission status, the research captured a wide range of cases, enhancing the diversity and inclusivity of the findings.

- The research, which was non-interventional and based solely on observation, included all patients with AWD, regardless of age or whether they were admitted to the hospital or discharged on the same day.
- The study provides detailed management and clinical assessment data, along with a two-week to one-month follow-up period.
- Positioned at the primary medical facility in the city where the initial cholera case emerged, this research serves as an essential tool for comprehending and combating the ongoing outbreak.

1. Introduction

Acute Watery Diarrhea (AWD) is a condition that typically lasts for less than 14 days and is caused by enterotoxigenic bacteria or viral infections in the gastrointestinal system. The bacterial etiologies of AWD are diverse and can include Vibrio cholera, Shigella, Salmonella, E. coli, or Campylobacter infections.

AWD outbreaks present significant challenges to healthcare systems due to their rapid onset and often unknown sources of infection. These outbreaks are frequently concentrated in areas where potential sources of infection, such as contaminated drinking water, inadequate water filtration infrastructure, animal exposure, and sewage-contaminated food and beverages, are prevalent. The response and impact of these outbreaks vary between countries based on factors such as healthcare infrastructure, emergency response capabilities, food and water sanitation practices, and population awareness of infectious diseases. Alarmingly, several countries with historically low AWD rates have experienced recent outbreaks, with nearly 70,106 reported AWD cases in three Middle East and North African countries, according to the WHO's December 2022 reports. [1–3]

Cholera, a waterborne intestinal infection transmitted through the fecal-oral route, is a well-known cause of AWD cases. Despite being easily treatable, cholera can become life-threatening if rehydration is delayed, leading to rapid volume depletion. While many developed countries successfully eradicated cholera years ago, low- and middle-income countries continue to face occasional outbreaks.[1,2] In late 2022, countries in the Eastern Mediterranean region, such as Iraq and Lebanon, reported significant cholera outbreaks, with Syria experiencing a resurgence of cholera after nearly two decades. [3]

By December 10, 2022, Syria had reported 61,671 suspected and confirmed cholera cases, along with 100 deaths across its 14 governorates. The outbreak began on September 10, 2022, when the Ministry of Health (MoH) declared a cholera outbreak in Aleppo Governorate. Following this declaration, other governorates began to report cases of Acute Watery Diarrhea (AWD) and suspected cholera cases. The most affected areas included Deir Ez-Zor with 20,103 cases, Idleb with 14,142 cases, Raqqa with 12,818 cases, and Aleppo with 11,617 cases, as indicated by reports from the World Health Organization (WHO) and the Syrian MoH. These reports also highlighted a case fatality rate of 0.2% and an overall cholera positivity rate of 46%. [3]

Despite the region's high prevalence of AWD and cholera outbreaks, there is limited detailed information available on the quality of the response and patient outcomes during these emergencies. By examining the cases at Aleppo University Hospital (AUH) during the outbreak period, we aim to provide

valuable insights into the effectiveness of response measures implemented by health authorities and the challenges encountered in managing AWD and cholera cases in a resource-limited environment. This information can inform future outbreak preparedness and response strategies, potentially reducing the morbidity and mortality rates associated with these infectious diseases.

This study focuses on reporting AWD cases at AUH in Aleppo Governorate during the outbreak from September 20 to October 20. The objective is to assess the quality of the response and patient outcomes within 30 days of the cases being reported in order to gain a better understanding of the healthcare system's management of AWD and cholera cases during this critical period.

2. Methods

2.1. Study design and Participants

This study in Syria is a localized, longitudinal study involving individuals of all ages. We conducted a prospective cohort study to enhance our understanding of AWD and to collect a comprehensive and high-quality dataset on the condition. Patients were admitted to AUH between September 20, 2022, and October 20, 2022. The process began with a request for verbal informed consent by physicians prior to the questionnaire administration, in compliance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement. [4]

2.2. Sample size calculation

The sample size for this study was calculated based on the estimated prevalence of AWD in the population. Using a conservative estimate of 2%, a confidence level of 95%, and a margin of error of 0.5%, the required sample size was calculated to be 385 participants. To account for potential dropouts and incomplete data, we aimed to recruit a more than 385 participants for this study during the chosen period for the study.

2.3. Ethical approval

The study received approval from AUH. The data utilized in this study were fully anonymized before being accessed by the authors. Furthermore, the study was conducted in accordance with the ethical standards outlined in the 1964 Declaration of Helsinki and its subsequent amendments, following ethical approval from the ethics committee at the Faculty of Medicine, University of Aleppo, with registered reference number 1932, to ensure compliance with ethical standards and guidelines for research involving human subjects.

2.4. Bias

The dean of the Faculty of Medicine, the heads of the Department of Internal Medicine and the Department of Pediatric Medicine, and the general director of AUH conducted an overall review and validation of the project. Medical staff members were also involved in the research. Investigators conducted fieldwork, with interviewers responsible for conducting interviews and collecting data, and doctors responsible for the health assessments. All efforts were made to ensure accurate registration of all data.

2.5. Data collection and Variables

Patients were interviewed using a structured questionnaire to collect information on patient characteristics, including demographics (such as age, gender, and place of residence), admission details (e.g., dehydration, fluid loss, and stool description), comorbidities, and previous medications.

Clinical examinations and patient history data were recorded, including measurements of blood pressure and heart rate, and assessment of clinical symptoms such as diarrhea, nausea, vomiting, fever, among

others. Additionally, details on cholera diagnosis, laboratory findings, rehydration, management, and follow-up were recorded. The questionnaire was designed following international standards.

All laboratory analyses were carried out by the central laboratory at AUH, including complete blood count and blood biochemistry (blood glucose, serum creatinine, urea, potassium, sodium).

Patients were categorized into five grades based on their health status using the American Society of Anesthesiologists Physical Status Classification. [5] Habits such as smoking and alcohol consumption were evaluated using the World Health Organization's Smoking and Tobacco Use Policy, which classifies patients into four categories: daily smoker, occasional smoker, former smoker, and never smoker. [6]

The patients' ages were categorized into several age groups. Patients were assessed, and their data was recorded during their hospital stay and two weeks after discharge. Those whose condition did not improve after two weeks were followed up for 30 days. Evaluation of patients occurred at discharge and two weeks later, with classification into several health categories: good health, indicating the absence of symptoms or presence of mild symptoms from the recovery stage; moderate health, indicating ongoing disease symptoms without serious complications or organ damage; poor health, indicating disease complications and lack of improvement; and deceased patients. Complications of AWD were documented, and dehydration severity was evaluated. The Patient Data Collection Form is provided in **Supplementary File A.**

2.6. Patient and public involvement

The patients did not participate in the questionnaire design, biological measurements, or outcome measures; neither did they participate in the design, recruitment, and conducting of the study. Furthermore, all patients or their families were informed about the use of the data for research purposes in this study.

2.7. Statistical methods

Patient data were entered into an Excel database and analyzed using SPSS statistical software version 26.0. Descriptive statistics, such as frequencies and percentages, were used to summarize patients' key results, including gender, age category, geographic location, shock index, ASA, and infection source. Quantitative variables were categorized, and frequencies and percentages for each category were calculated. Subgroup analyses by age groups for all primary study variables provided a comprehensive data assessment. The last observation carried forward technique was employed to address missing data, involving carrying forward the most recent recorded observation to fill in missing data points during follow-up. The follow-up period lasted two weeks but extended up to a month for deteriorating patients. This method allowed for systematic management of missing data and ensured analyses were conducted using the most complete dataset available.

3. Results

3.1. Main Characteristics of the Patients

A total of 1061 AWD patients were admitted to AUH between 22 September and 22 October 2022, with a notable gender distribution showcasing 46.5% as males. The majority were in the middle-age category (30-60 years) and early childhood (<2 years). A predominant proportion of patients (58.6%) were residents from urban areas, and 40.3% were residents from rural areas. According to the ASA score, 74.4% were healthy (ASA1).

In most cases (63%) patients could not define the infection source. It seems that the recent AWD outbreak in Syria is not associated with tap water contamination, as no clear clustering of cases were

identified. Intriguingly, a diverse range of potential infection sources emerged from patient data within our hospital, including uncontrolled well water, vegetables (notably parsley and mint, might irrigated with contaminated water), and fecal-oral transmission through contaminated street/fast food particularly those integrating vegetables. The summary of the patients' characteristics is shown in **Table 1**.

3.2. Clinical Manifestations and Laboratory Findings

The most frequent clinical manifestations of the patients besides diarrhea were nausea and vomiting, and abdominal cramps (73.6%, 54.3%) respectively. Except for WBC count, most of the patients had normal laboratory tests. 47.6% of patients had hemoglobin between (10-17 g/dL). Platelets were also within the normal range in 77.5% of patients. On the other hand, 55.8% of patients had WBC over 10*10^9/L. All Laboratory tests and Clinical Manifestations are demonstrated in detail in **Table 2**.

3.3. Patients Management

The mainstay of treatment is aggressive volume repletion with adjuvant antibiotic therapy. 77.7% of patients needed intravenous rehydration, 33.4% were given Lactated Ringer solution, and 23.6% received Isotonic sodium chloride solution. Also, 65.7% were given oral rehydration salts (ORS). Regarding antibiotics, doxycycline and ciprofloxacin were prescribed in most cases (61%). Other antibiotics were also used in some cases, such as tetracycline, trimethoprim/sulfamethoxazole, furazolidone, and others. The accurate proportions are shown in **Table 3**.

3.4. Outcome of the Study

Among the 1061 cases, the majority of patients were discharged on the same day as admission (69.8%), with fewer discharged the following day (3.0%) or after a longer period (27.1%). A small percentage of patients required ICU care (0.9%) and dialysis (1%). At discharge, most patients were in good health (79.7%), followed by moderate health (17.6%) and poor health (2.3%). A minimal number of patients passed away before discharge (0.4%).

Reported complications at admission and during hospital stays included severe dehydration (16.3%), electrolyte imbalance (28.2%), acute kidney injury (0.9%), shock (2.0%), hypoglycemia (3.0%), and other issues (1.8%). The most common complications were electrolyte imbalance (28.2%) followed by severe dehydration (16.3%).

In the follow-up period, the majority of patients continued to show good health (81.0%), followed by moderate health (14.6%) and poor health (3.4%). A small number of patients passed away during follow-up, with four deaths at AUH and six at other hospitals (0.9% in total). **Table 4**

In the sub-group analysis two weeks to one-month post-admission, the majority of patients in all age groups exhibited positive health outcomes, ranging from 69.5% to 88.9%. The Age7 (>60 years) category had the highest percentage of patients with poor health outcomes at 8.4%, with the highest death rate in the same age group at 4.2%, followed by patients under 2 years at 1.5%. Overall, the data suggests varying health outcomes based on age, with younger individuals showing a higher likelihood of recovery compared to older age groups. **(Supplementary File B)**

4. Discussion

Between September and October 2022, AUH admitted 1061 patients with AWD, most of whom were middle-aged or young children. The results of the 2017 outbreak in Yemen also show a similar pattern to our findings, with the middle-aged (15-49 years) and children (less than 15 years) groups being the most affected. [7,8] In the same context, 69% of those infected with the Nigerian outbreak in 2005 were 15 years old and above, and 90% of the deaths were in this age group, according to Shittu et al.[9] As well as in the 2004 Nepal outbreak. [10] What may explain these results is that these age groups are

more exposed to known sources of infection than others. Females are slightly more affected, but there is no statistical significance for the incidence rates related to sex. This is due to the fact that cholera is an infectious disease. Data from Bangladesh confirm this finding.[11]

The previous outbreak in Syria does not appear to be linked to tap water contamination, but rather to potential sources such as uncontrolled well water and contaminated vegetables, similar to outbreaks in other countries like Yemen and Nigeria. [7,9]

The association of severe watery diarrhea with nausea and vomiting in many unmanaged cases worsens the situation and leads the patient to dehydration and electrolyte disturbance, which may be dangerous in many cases. Only a few studies in the medical literature have highlighted this association, including the study that highlighted the AWD during the 2017-2019 Rohingya crisis in Cox's Bazar, Bangladesh. [10]

We relied on case management based on what was previously known. We determined the amount and type of fluid resuscitation according to the level of volume depletion. Mild cases, which constitute most cases, were treated with oral rehydration. As for moderate and severe cases, urgent intravenous rehydration through Lactated Ringer solution or isotonic sodium chloride solution was the key to restoring circulation. Nevertheless, antibiotics were also considered in many patients, and electrolyte replacement in selective patients. [12]

38.7% of patients experienced significant complications after being diagnosed with AWD. The most common complications were electrolyte imbalance (28.2%) and severe dehydration (16.3%). Other complications, such as acute kidney injury, volume shock, and hypoglycemia, occurred in smaller numbers. Additionally, only a small percentage of patients (0.4%) died while in the hospital. This is consistent with outbreaks in other countries. Iraq, for instance, confirmed 3,063 cholera cases and 19 (0.6%) deaths, while Lebanon announced 5,372 confirmed and suspected cholera cases with 23 (0.4%) deaths. [3]

This study has several limitations that impact the generalizability and validity of the findings. Firstly, the limited sample size, as the study was conducted at AUH, may not accurately represent all cases of AWD in Syria. Additionally, selection bias was introduced as only cases admitted to the hospital were included, potentially skewing the results. The lack of long-term follow-up limited the assessment of outcomes beyond 30 days post-discharge. The study was limited to a specific region in Syria and may not be applicable to other regions with different healthcare settings, demographics, and environmental factors.

Conclusion

This study has yielded descriptive results reminiscent of studies conducted during prior AWD outbreaks in developing countries like Yemen, Nigeria, and Lebanon. We have outlined the sources of infection, including contaminated well water and vegetables. Regrettably, we observed a stagnation in outcomes, with no discernible improvement in terms of morbidity or mortality compared to past outbreaks. Consequently, it is imperative that future research endeavors delve deeper into the risk factors that contribute to the proliferation and severity of the disease, as well as explore optimal management strategies.

Competing interests None declared.

Patient consent for publication Not required.

Supplementary Files Description

Supplementary File A Data Collection Acute Watery Diarrhea Study Sheet.docx

Supplementary File B Subgroups Age Analysis.docx

Data availability statement

The creation of a dataset consisting of over a thousand patients with AWD during the 2022 cholera outbreak in Aleppo, Syria, along with detailed patient observations, is of great significance. Through the documentation and analysis of this extensive dataset, we are better equipped to comprehend the characteristics, trends, and outcomes of cholera cases during this specific outbreak. This dataset can serve as a valuable resource for public health officials, researchers, and healthcare providers as they develop more effective strategies for the prevention, treatment, and control of cholera in similar settings. The dataset is accessible through the corresponding author. We encourage any research group interested in utilizing this data to submit a research proposal outlining background information, research questions, methods, and authorship for potential collaborations. All research proposals will undergo review by a scientific committee. Furthermore, proper citation is required when referencing or using this research data in order to acknowledge the source and credit the original researchers and contributors. Adherence to these guidelines upholds transparency, ethics, and integrity in the utilization of the valuable data gathered and analyzed in this study.

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Authors contributions

Ahmad Yamen Arnaout played a key role in coordinating the study, designing the study, developing the methodology, validating the findings, conducting data analysis, interpreting the data, and contributing to the original draft of the manuscript, as well as review of the final version. **Yaman Nerabani** contributed to the writing of the original draft and provided critical feedback during the manuscript review process. **Mohamad Nabhan Sawas** was involved in data collection, data cleaning, writing the original draft, and reviewing the manuscript. **Tala Jouma Alhejazi** was responsible for writing the original draft of the manuscript and contributing to data interpretation. **Mohamad Ali Farho** participated in data collection, writing the original draft, and reviewing the manuscript. **Hassan Alshaker, and Khaled Arnaout** provided input in writing the original draft and contributed to data interpretation. **Baraa Shebli and Mostafa Helou** served as Study Coordinators and validated the study. **Bashir Badawi Mobaied, Mohamad Bassel Mouti, Fares Kady, and Ziad aljarad** provided scientific supervision, validated the study, and critically reviewed the manuscript. The **Aleppo University Hospital Team** played a critical role in data collection for this study.

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Table 1: Main Characteristics of the Patients

		AWD Cases	Percent	Total
Gender (Male, n)		493	46.5	1061
Age Category				1061
	<2	206	19.4	
	2 -5	99	9.3	
	5 - 10	86	8.1	
	10 – 18	140	13.2	
	18 -30	146	13.8	
	30 - 60	289	27.2	
	>60	95	9.0	
Geographic				1058
	Urban life	620	58.6	
	Rural life	426	40.3	
	Nomad life	12	1.1	
Shock Index (SI)				862
	Under 0.6	52	6.0	
	0.6 ~ 1 normal	399	46.3	
	1~ 1.4	268	31.1	

	1.4 – 2	126	14.6	
	More than 2	17	2.0	
ASA				1061
	ASA I	789	74.4	
	ASA II	224	21.1	
	ASA III	42	4.0	
	ASA IV	6	0.6	
	ASA V	0		
Infection Source (as reported by patient)				1061
	Contaminated Fruits	25	2.4	
	Contaminated Water	2	0.2	
	Corn Cobs	1	0.1	
	Falafel, peanut and fatteh	15	1.4	
	Fast Food	57	5.4	
	Fish	1	0.1	
	Ice cream	11	1.0	
	Ice cubes	15	1.4	
	Meat	4	0.4	
	Milk	13	1.2	
	Rice	1	0.1	
	Swimming in a Contaminated Pool	3	0.3	
	The infection passed from his\her family	30	2.8	
	Vegetables such as parsley and mint	136	12.8	
	Well Water	79	7.4	
	Unknown	668	63.0	

AWD: Acute Watery Diarrhea, **BMI**: Body Mass Index, **ASA:** American Society of Anesthesiologists Classification.
ASA I: Healthy person,
ASA II: Mild systemic disease.
ASA III: Severe systemic disease.
ASA IV: Severe systemic disease that is a constant threat to life.
ASA IV: A moribund person who is not expected to survive without the operation.
ASA V: A declared brain-dead person whose organs are being removed for donor purposes.

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Table 2: Clinical Manifestations and Laboratory Findings

		AWD Cases	Percent	Total
Clinical Presentation in addition to diarrhea				
	Nausea and Vomiting	781	73.6	1061
	Abdominal cramps	576	54.3	1061
	Other	139	13.1	1061
Severity of dehydration				1003
	Severe	174	17.3	
	Some	507	50.5	
	None	322	32.1	
Laboratory Findings Hemoglobin (g/dL)				845
	Less than 10	197	23.3	
	10 - 12	243	28.8	
	12 - 17	387	45.8	
	more than 17	18	2.1	
Platelet (10^3 /µL)				821
	Less than 15	3	0.4	
	15 - 30	6	0.7	
	30 - 50	4	0.5	
	50 - 150	50	6.1	
	150 - 450	636	77.5	
	more than 450	122	14.9	
Serum Creatinine (mg/dl)				812
	less than 0.6	311	38.3	
	0.6 - 1.3	344	42.4	
	more than 1.3	157	19.3	
Serum Urea (mg/dl)				821
	10 - 50	639	77.8	
	more than 50	182	22.2	
WBC (10^9/L)				744
	less than 4.5	34	4.6	
	4.5 - 10	295	39.7	
	more than 10	415	55.8	
Random Glucose (mg/dl)				579
	less than 40	32	5.5	
	40 - 120	365	63	
	120 - 200	150	25.9	
	more than 200	32	5.5	
Serum potassium (mEq/L)				817

	less than 3.5	270	33	
	3.5 - 5	516	63.2	
	more than 5	31	3.8	
Serum Sodium (mEq/L)				814
	less than 135	352	43.2	
	135 - 145	446	54.8	
	more than 145	16	2	

AWD: Acute Watery Diarrhea
Severity of dehydration:
Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry, absent tears, Unable to drink, drinks poorly)
Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)
None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst).
WBC: Wight Blood Cells

Table 3: Patients management

		AWD Cases	Percent (of total AWD cases)
Intravenous Rehydration			
	Lactated Ringer solution.	354	33.4
	Isotonic sodium chloride solution	250	23.6
	Other	138	20.7
	Total	728	68.6
ORS rehydration		697	65.7
Antibiotic treatment			
	Total	682	64.3
	Tetracycline	7	0.7
	Doxycycline	328	30.9
	Trimethoprim/sulfamethoxazole	2	0.2
	Furazolidone	5	0.5
	Ciprofloxacin	319	30.1
	Ampicillin	0	0
	Other	233	22
Potassium supplementation			
	Oral	18	1.6
	Intravenous	233	22.0
	Potassium-sparing diuretics	3	0.3
	Total	254	23.9

AWD: Acute Watery Diarrhea**, ORS**: Oral Rehydration Solution

Table 4: Outcomes of the Study

		AWD Cases	Percent	Total
Patient Discharge				1061
	Same day with admission	741	69.8	
	Next day	32	3.0	
	After	288	27.1	
Need for ICU		10	0.9	1061
Need for Dialysis		9	1	907
Patient Health at discharge*				1061
	Good	846	79.7	
	Moderate	187	17.6	
	Poor	24	2.3	
	Died before discharge	4	0.4	
Complications at admission and in the hospital				
	All	411	38.7	1061
	Severe Dehydration	173	16.3	1061
	Electrolyte Imbalance	299	28.2	1061
	Acute Kidney Injury	10	0.9	1061
	Shock	21	2	1061
	Hypoglycemia	32	3	1061
	Other	19	1.8	1061
Patient's Health after follow-up				1061
	Good	858	81.0	
	Moderate	155	14.6	
	Poor	36	3.4	
	Die	10 (4 in AUB, & 6 in a other hospital)	0.9	

AWD: Acute Watery Diarrhea.

*: Good health: the patient no longer had any symptoms or mild symptoms from the convalescent stage. Moderate Health: the patient is still suffering from the symptoms of the disease, but without any serious complications or damage to the organs. Poor health: the patient suffers from complications of the disease and his condition is poor and has never improved. **AUB**: Aleppo University Hospital.

Acute Watery Diarrhea Patient Data Collection Form

Data collection form for Acute Watery Diarrhea Patients

Part A: Demographics

1) ID _____

2) Gender: Male / Female

3) Patient Age_____

4) Geographic

- Urban life
- Rural life
- Nomad life

5) Potential Source of Infection _____

Part B: Admission details

1) Admission Date DD/MM/YYYY

_____

2) Diarrhea Onset before

_____ days

3) Clinical Presentation

- ☐ **Diarrhea**
  how many times in a day? _____.
- ☐ **Vomiting**
- ☐ **Abdominal cramps**
- ☐ **Fever**
- ☐ **Dehydration**
- ☐ **Other**
  If Other, Please Specify
  _____
  _____

4) Chief Complaint was

_____

_____

5) Assessment of severity of dehydration:

- **Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry, tears absent, Unable to drink, drinks poorly)**
- **Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)**
- **None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)**

Part D: Co-morbidities

1) Height _____ m

2) Weight _____ kg

3) Patient BMI_____ kg/m^2

4) Heart Rate _____

5) Blood Pressure _____

7) Shock Index (SI) (heart rate (HR) / systolic blood pressure (SBP)) _____

6) ASA Grade (chose number between 1 >>5)____

- ASA 1: Healthy person. Example: Fit, nonobese (BMI under 30), a nonsmoking patient with good exercise tolerance.
- ASA 2: well-controlled disease (e.g., treated hypertension, obesity with BMI under 35, frequent social drinker, or cigarette smoker).
- ASA 3: a severe systemic disease that is not life-threatening. (e.g., poorly treated hypertension or diabetes, morbid obesity, chronic renal failure).
- ASA 4: a severe systemic disease that is a constant threat to life.
- ASA 5: A moribund person who is not expected to survive without the intervention.

7) Comorbidities:

- ☐ Diabetes mellitus
- ☐ Hypertension requiring medication
- ☐ Ischemic heart disease
- ☐ Chronic obstructive pulmonary disease (COPD)
- ☐ Asthma
- ☐ Ulcer disease
- ☐ Known liver cirrhosis
- ☐ Deep Vein Thrombosis
- ☐ Urinary Tract infection
- ☐ Chronic immunosuppression
- ☐ Cerebrovascular accident
- ☐ Chronic kidney disease (on dialysis or GFR <30 mL/min/1.73m2)
- ☐ Others (18)

If other, please Specify

_____

8) Past history of COVID-19 infection (within the last 6 months)

- Yes
- No

Time gap between COVID-19 infection and Cholera Infection (in weeks): _____ Weeks

9) Previous open abdominal surgery/laparotomy

- Yes
- No

If Yes, please indicate the cause

_____

10) Past Gastrointestinal Surgery

- Yes
- No

If Yes, please indicate the Cause

_____

_____

11) Past Medicine History:

- Antacids
- Histamine receptor blockers
- Proton pump inhibitors (PPI)
- Antibiotics (within last month)

  If Yes, please specify Antibiotics Group

  _____

  _____
- Other

  _____

  _____

12) Current smoker within 1 year: (even with hookah)

- Active smoker
  - A daily smoker
  - An occasional smoker
- Ex-smoker
- Never smoked

13) Is the patient:

- Not drinking alcohol.
- Drinking alcohol in moderation (2 drinks or less in a day for men and 1 drink or less in a day for women)
- Binge Drinking (consuming 5 or more drinks (male), or 4 or more drinks (female), in about 2 hours.)
- Heavy Alcohol Use (binge drinking on 5 or more days in the past month.)

14) Cholera Vaccine

- Yes
- No

If yes, please specify the type of Vaccine

_____

Part E: Cholera Workup

1) Diagnosis was made according to:

- **Clinically (According to WHO: In an area with a noted cholera epidemic, a patient aged 5 years or older develops acute watery diarrhea, with or without vomiting)**
- **Biochemical confirmation and characterization of the isolate.**
- **Polymerase chain reaction (PCR) tests.**

2) If Biochemical confirmation and characterization of the isolate was done please tick all that apply

- **Stool Examination**
- **Stool Culture**
- **Serotyping and Biotyping**

  If done, Please specify the type

  _____

  _____
- **Hematologic Tests**
- **Metabolic Panel**

3) Laboratory findings (If done)

- Hemoglobin (g/dL) _____
- Platelet (10^3 /µL) _____
- Bilirubin Total (mg/dL) ____
- Bilirubin direct (mg/dL) ___
- AST (U/L) _____
- ALT (U/L) _____
- Urea (mg/dL) _____
- Serum creatinine (mg/dL)__
- Alkaline phosphatase _____
- White blood cell count, 10^9/L _____
- K+ _____
- Na+ _____
- HCO3- _____
- PCo2 _____
- Ph _____
- Glucose _____
- Blood type (ABO +/-) _____

Part F: Treatment & Management

1) Intravenous Rehydration

- **Yes**
- **No**

If yes, please set the volume of intravenous infusion at the day case

_____

_____ml/day case. (example: 2000 ml / day case)

Set the rate of Intravenous Rehydration

_____

_____

_____ml/kg in hours (example; 30ml/kg in first hour then 70 ml / kg in next five hours)

Type of solution

- **Lactated Ringer solution.**
- **Isotonic sodium chloride solution**
- **Other _____**

2) ORS rehydration:
- ○ **Yes**
- ○ **No**

If yes, please set the volume of ORS Solution at the day case

_____ml/day case. (example: 2000 ml / day case)

Set the rate of Intravenous Rehydration

_____ml/kg in hours (example; 30ml/kg after each loose stool then 70 ml / kg in next five hours)

3) Antibiotic treatment
- ○ **Yes**
- ○ **No**

If yes, please specify
- □ **Tetracycline**
- □ **Doxycycline**
- □ **Trimethoprim and sulfamethoxazole**
- □ **Furazolidone**
- □ **Ciprofloxacin**
- □ **Ampicillin**
- □ **Other _____**

Dose
- ○ **Single dose**
- ○ **Multiple dose**

_____ (for example 60 mg / once a day)

4) Sodium Bicarbonate
- ○ **Yes**
- ○ **No**

If yes, please specify the reason

_____
_____

5) Potassium supplementation
- ○ **Yes**
  - □ **Oral potassium supplementation**
  - □ **Intravenous potassium replacement**
  - □ **Potassium-sparing diuretics**
- ○ **No**

If yes, please specify the reason

_____

Part G: Follow-up Data at Staying in hospital

1) Patient Discharge
- ○ **Same day with admission**
- ○ **Next day**
- ○ **After _____ days (example after two days)**

2) Did the patient die?
- ○ **Yes**
- ○ **No**

If yes, please specify the reason

_____
_____

3) Patient Health at discharge
- ○ **Good**
- ○ **Moderate**
- ○ **Bad**

4) Did the patient need ICU care?
- ○ **Yes**
- ○ **No**

If Yes, please describe the reason

_____
_____

5) Did the patient need dialysis
- ○ **Yes**
- ○ **No**

If yes, please specify the reason

_____
_____

Did the patient have any complication through staying at hospital?
- ○ **Yes**
- ○ **No**

If yes, please specify

_____
_____

Part H: Follow-up Data during 30 days

1) Did the patient have any complication through 30 days after the discharge?
- ○ Yes
- ○ No

If yes, please specify _____

2) Did the patient die as a result of a complication?
- ○ Yes
- ○ No

If Yes, please specify the reason

_____
_____

3) Any additional pharmacological treatment instituted by the medical team after discharge at home (other than routine treatment and prescription at discharge)
- ○ Yes
- ○ No

If Yes, please specify

_____
_____

4) Patient Health after 30 days from the admission:
- ○ Good
- ○ Moderate
- ○ Bad

Any Additional Notes: _____

Supplementary File B Subgroup's analysis

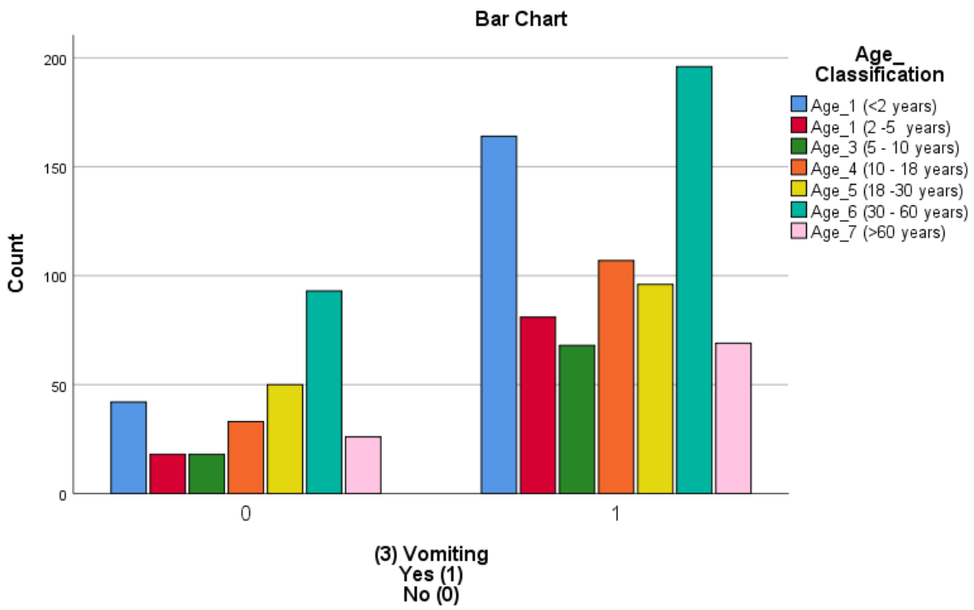
Symptoms and laboratory findings according to age Class

(3) Vomiting
Yes (1)
No (0)

*** Age_ Classification Crosstabulation**

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
(3) Vomiting Yes (1) No (0)	0	Count	42	18	18	33	50	93	26	280
		% within (3) Vomiting Yes (1) No (0)	15.0%	6.4%	6.4%	11.8%	17.9%	33.2%	9.3%	100.0%
		% within Age_ Classification	20.4%	18.2%	20.9%	23.6%	34.2%	32.2%	27.4%	26.4%
		% of Total	4.0%	1.7%	1.7%	3.1%	4.7%	8.8%	2.5%	26.4%
	1	Count	164	81	68	107	96	196	69	781
		% within (3) Vomiting Yes (1) No (0)	21.0%	10.4%	8.7%	13.7%	12.3%	25.1%	8.8%	100.0%
		% within Age_ Classification	79.6%	81.8%	79.1%	76.4%	65.8%	67.8%	72.6%	73.6%
		% of Total	15.5%	7.6%	6.4%	10.1%	9.0%	18.5%	6.5%	73.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within (3) Vomiting Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%

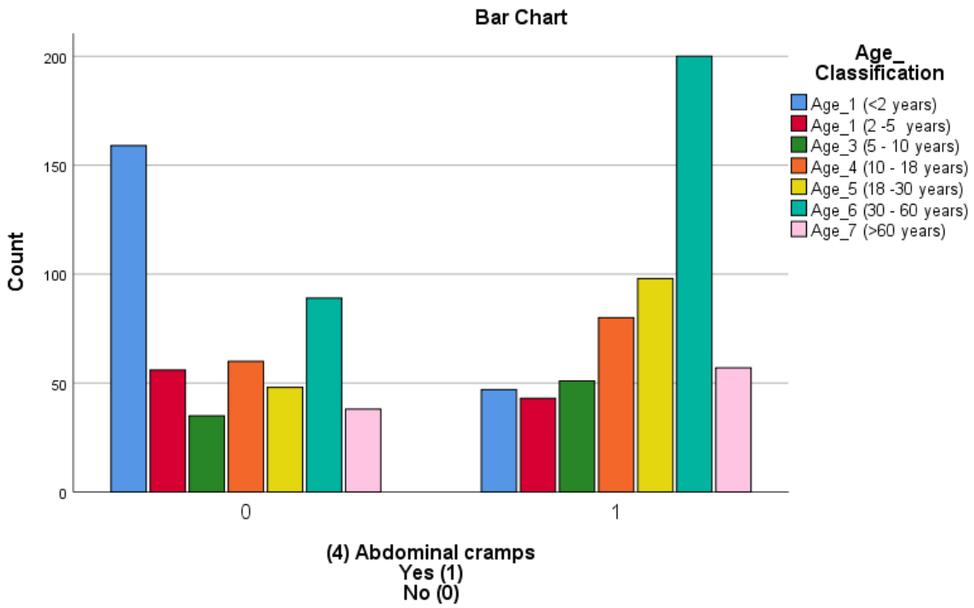
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(4) Abdominal cramps
Yes (1)
No (0) * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
(4) Abdominal cramps Yes (1) No (0)	0	Count	159	56	35	60	48	89	38	485
		% within (4) Abdominal cramps Yes (1) No (0)	32.8%	11.5%	7.2%	12.4%	9.9%	18.4%	7.8%	100.0%
		% within Age_ Classification	77.2%	56.6%	40.7%	42.9%	32.9%	30.8%	40.0%	45.7%
		% of Total	15.0%	5.3%	3.3%	5.7%	4.5%	8.4%	3.6%	45.7%
	1	Count	47	43	51	80	98	200	57	576
		% within (4) Abdominal cramps Yes (1) No (0)	8.2%	7.5%	8.9%	13.9%	17.0%	34.7%	9.9%	100.0%

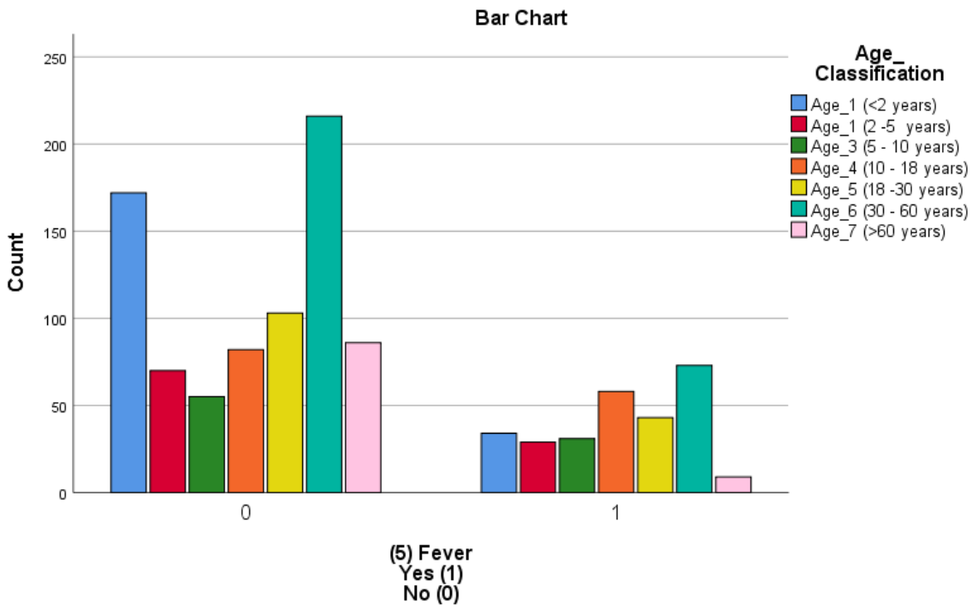
	% within Age_ Classification	22.8%	43.4%	59.3%	57.1%	67.1%	69.2%	60.0%	54.3%
	% of Total	4.4%	4.1%	4.8%	7.5%	9.2%	18.9%	5.4%	54.3%
Total	Count	206	99	86	140	146	289	95	1061
	% within (4) Abdominal cramps Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(5) Fever Yes (1) No (0) * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_ 1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_ 7 (>60 years)	Total
(5) Fever Yes (1) No (0)	0	Count	172	70	55	82	103	216	86	784
		% within (5) Fever Yes (1) No (0)	21.9%	8.9%	7.0%	10.5%	13.1%	27.6%	11.0%	100.0%

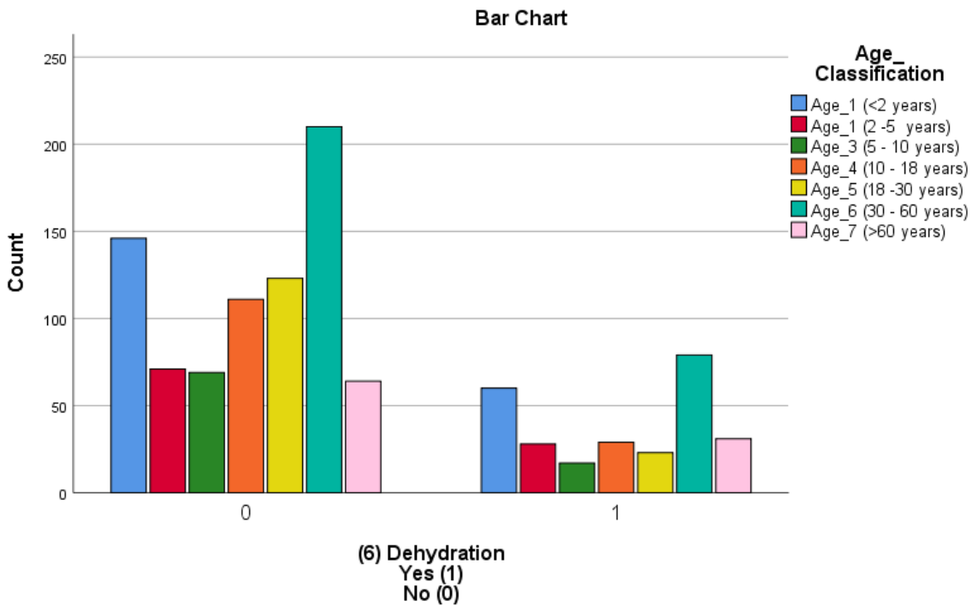
		% within Age_ Classification	83.5%	70.7%	64.0%	58.6%	70.5%	74.7%	90.5%	73.9%
		% of Total	16.2%	6.6%	5.2%	7.7%	9.7%	20.4%	8.1%	73.9%
	1	Count	34	29	31	58	43	73	9	277
		% within (5) Fever Yes (1) No (0)	12.3%	10.5%	11.2%	20.9%	15.5%	26.4%	3.2%	100.0%
		% within Age_ Classification	16.5%	29.3%	36.0%	41.4%	29.5%	25.3%	9.5%	26.1%
		% of Total	3.2%	2.7%	2.9%	5.5%	4.1%	6.9%	0.8%	26.1%
Total		Count	206	99	86	140	146	289	95	1061
		% within (5) Fever Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(6) Dehydration Yes (1) No (0) * Age_ Classification Crosstabulation

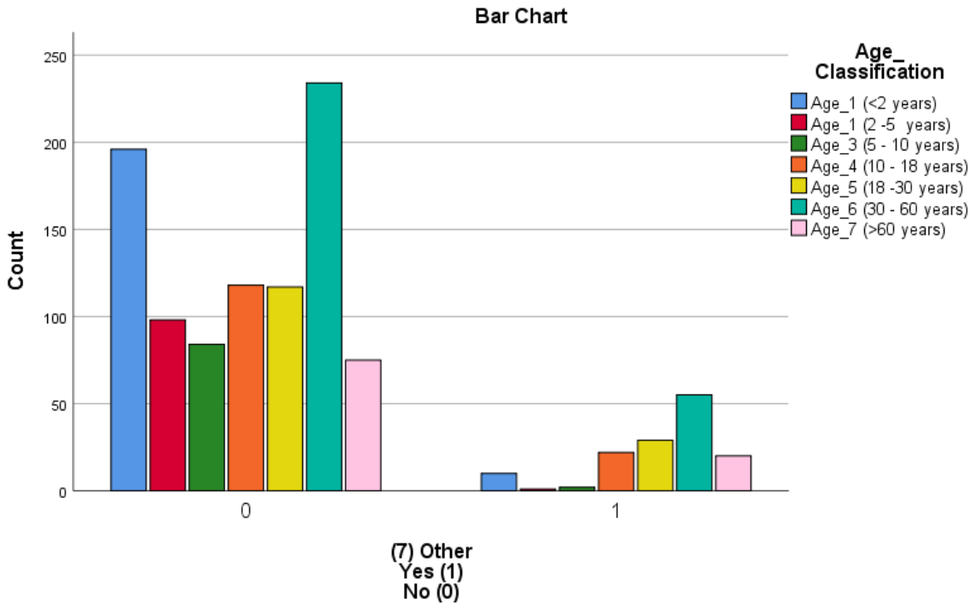
		Age_ Classification	Total

			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	
(6) Dehydration Yes (1) No (0)	0	Count	146	71	69	111	123	210	64	794
		% within (6) Dehydration Yes (1) No (0)	18.4%	8.9%	8.7%	14.0%	15.5%	26.4%	8.1%	100.0%
		% within Age_ Classification	70.9%	71.7%	80.2%	79.3%	84.2%	72.7%	67.4%	74.8%
		% of Total	13.8%	6.7%	6.5%	10.5%	11.6%	19.8%	6.0%	74.8%
	1	Count	60	28	17	29	23	79	31	267
		% within (6) Dehydration Yes (1) No (0)	22.5%	10.5%	6.4%	10.9%	8.6%	29.6%	11.6%	100.0%
		% within Age_ Classification	29.1%	28.3%	19.8%	20.7%	15.8%	27.3%	32.6%	25.2%
		% of Total	5.7%	2.6%	1.6%	2.7%	2.2%	7.4%	2.9%	25.2%
Total		Count	206	99	86	140	146	289	95	1061
		% within (6) Dehydration Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



(7) Other
Yes (1)
No (0) * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
(7) Other Yes (1) No (0)	0	Count	196	98	84	118	117	234	75	922
		% within (7) Other Yes (1) No (0)	21.3%	10.6%	9.1%	12.8%	12.7%	25.4%	8.1%	100.0%
		% within Age_ Classification	95.1%	99.0%	97.7%	84.3%	80.1%	81.0%	78.9%	86.9%
		% of Total	18.5%	9.2%	7.9%	11.1%	11.0%	22.1%	7.1%	86.9%
	1	Count	10	1	2	22	29	55	20	139
		% within (7) Other Yes (1) No (0)	7.2%	0.7%	1.4%	15.8%	20.9%	39.6%	14.4%	100.0%
		% within Age_ Classification	4.9%	1.0%	2.3%	15.7%	19.9%	19.0%	21.1%	13.1%
		% of Total	0.9%	0.1%	0.2%	2.1%	2.7%	5.2%	1.9%	13.1%
Total		Count	206	99	86	140	146	289	95	1061
		% within (7) Other Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



severity of dehydration

(1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly)

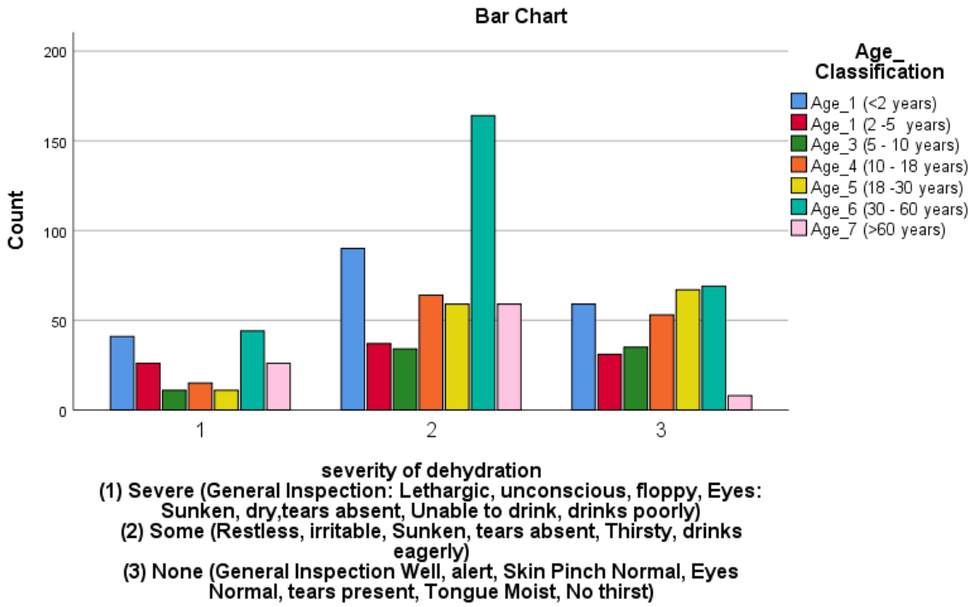
(2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly)

(3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst) * Age_ Classification Crosstabulation

			Age_ Classification						
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
severity of dehydration	1	Count	41	26	11	15	11	44	26	174

(1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)		% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	23.6%	14.9%	6.3%	8.6%	6.3%	25.3%	14.9%	100.0%
		% within Age_ Classification	21.6%	27.7%	13.8%	11.4%	8.0%	15.9%	28.0%	17.3%
		% of Total	4.1%	2.6%	1.1%	1.5%	1.1%	4.4%	2.6%	17.3%
	2	Count	90	37	34	64	59	164	59	507
		% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	17.8%	7.3%	6.7%	12.6%	11.6%	32.3%	11.6%	100.0%
		% within Age_ Classification	47.4%	39.4%	42.5%	48.5%	43.1%	59.2%	63.4%	50.5%
		% of Total	9.0%	3.7%	3.4%	6.4%	5.9%	16.4%	5.9%	50.5%
	3	Count	59	31	35	53	67	69	8	322

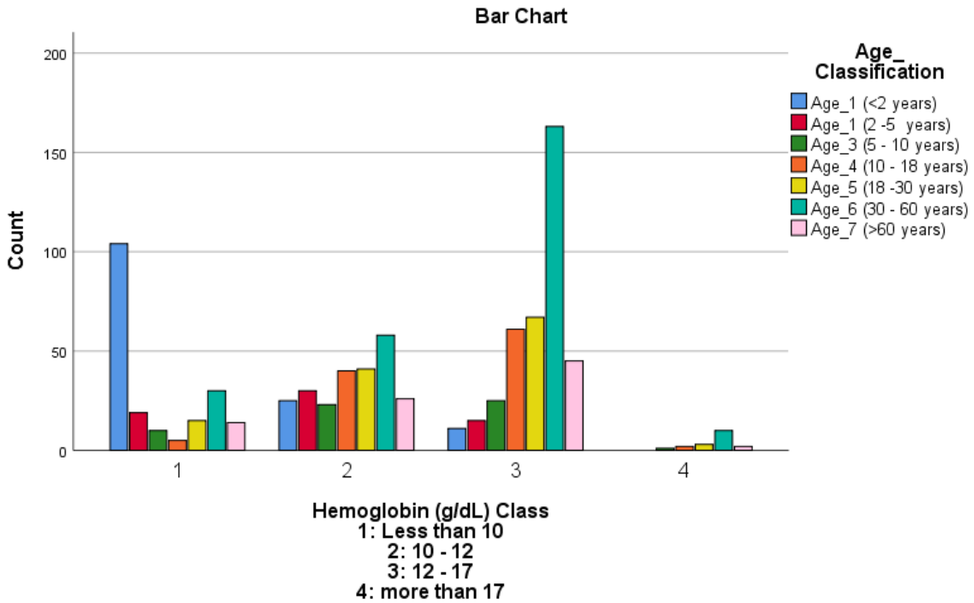
	% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	18.3%	9.6%	10.9%	16.5%	20.8%	21.4%	2.5%	100.0%
	% within Age_ Classification	31.1%	33.0%	43.8%	40.2%	48.9%	24.9%	8.6%	32.1%
	% of Total	5.9%	3.1%	3.5%	5.3%	6.7%	6.9%	0.8%	32.1%
Total	Count	190	94	80	132	137	277	93	1003
	% within severity of dehydration (1) Severe (General Inspection: Lethargic, unconscious, floppy, Eyes: Sunken, dry,tears absent, Unable to drink, drinks poorly) (2) Some (Restless, irritable, Sunken, tears absent, Thirsty, drinks eagerly) (3) None (General Inspection Well, alert, Skin Pinch Normal, Eyes Normal, tears present, Tongue Moist, No thirst)	18.9%	9.4%	8.0%	13.2%	13.7%	27.6%	9.3%	100.0%
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	18.9%	9.4%	8.0%	13.2%	13.7%	27.6%	9.3%	100.0%



Hemoglobin (g/dL) Class
1: Less than 10
2: 10 - 12
3: 12 - 17
4: more than 17 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Hemoglobin (g/dL) Class	1	Count	104	19	10	5	15	30	14	197
1: Less than 10		% within Hemoglobin (g/dL) Class 1: Less than 10 2: 10 - 12 3: 12 - 17 4: more than 17	52.8%	9.6%	5.1%	2.5%	7.6%	15.2%	7.1%	100.0%
2: 10 - 12										
3: 12 - 17										
4: more than 17										
		% within Age_ Classification	74.3%	29.7%	16.9%	4.6%	11.9%	11.5%	16.1%	23.3%
		% of Total	12.3%	2.2%	1.2%	0.6%	1.8%	3.6%	1.7%	23.3%
	2	Count	25	30	23	40	41	58	26	243

		% within Hemoglobin (g/dL) Class 1: Less than 10 2: 10 - 12 3: 12 - 17 4: more than 17	10.3%	12.3%	9.5%	16.5%	16.9%	23.9%	10.7%	100.0%
		% within Age_ Classification	17.9%	46.9%	39.0%	37.0%	32.5%	22.2%	29.9%	28.8%
		% of Total	3.0%	3.6%	2.7%	4.7%	4.9%	6.9%	3.1%	28.8%
	3	Count	11	15	25	61	67	163	45	387
		% within Hemoglobin (g/dL) Class 1: Less than 10 2: 10 - 12 3: 12 - 17 4: more than 17	2.8%	3.9%	6.5%	15.8%	17.3%	42.1%	11.6%	100.0%
		% within Age_ Classification	7.9%	23.4%	42.4%	56.5%	53.2%	62.5%	51.7%	45.8%
		% of Total	1.3%	1.8%	3.0%	7.2%	7.9%	19.3%	5.3%	45.8%
	4	Count	0	0	1	2	3	10	2	18
		% within Hemoglobin (g/dL) Class 1: Less than 10 2: 10 - 12 3: 12 - 17 4: more than 17	0.0%	0.0%	5.6%	11.1%	16.7%	55.6%	11.1%	100.0%
		% within Age_ Classification	0.0%	0.0%	1.7%	1.9%	2.4%	3.8%	2.3%	2.1%
		% of Total	0.0%	0.0%	0.1%	0.2%	0.4%	1.2%	0.2%	2.1%
Total		Count	140	64	59	108	126	261	87	845
		% within Hemoglobin (g/dL) Class 1: Less than 10 2: 10 - 12 3: 12 - 17 4: more than 17	16.6%	7.6%	7.0%	12.8%	14.9%	30.9%	10.3%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.6%	7.0%	12.8%	14.9%	30.9%	10.3%	100.0%

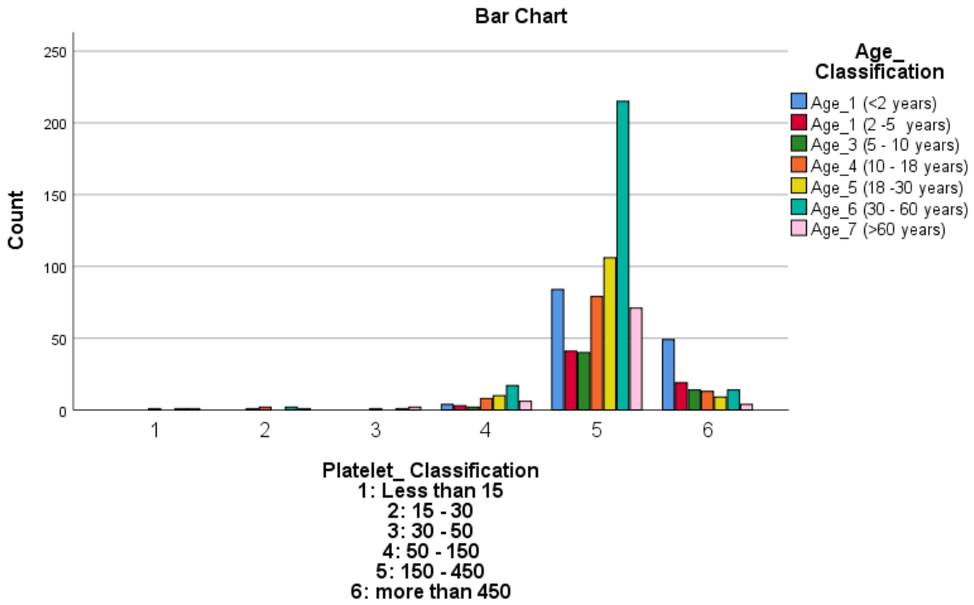


Platelet_ Classification
1: Less than 15
2: 15 - 30
3: 30 - 50
4: 50 - 150
5: 150 - 450
6: more than 450 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Platelet_ Classification	1	Count	0	0	0	1	0	1	1	3
1: Less than 15		% within Platelet_ Classification	0.0%	0.0%	0.0%	33.3%	0.0%	33.3%	33.3%	100.0%
2: 15 - 30		1: Less than 15								
3: 30 - 50		2: 15 - 30								
4: 50 - 150		3: 30 - 50								
5: 150 - 450		4: 50 - 150								
6: more than 450		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	0.0%	0.0%	0.0%	1.0%	0.0%	0.4%	1.2%	0.4%

		% of Total	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.4%
	2	Count	0	0	1	2	0	2	1	6
		% within Platelet_ Classification	0.0%	0.0%	16.7%	33.3%	0.0%	33.3%	16.7%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	0.0%	0.0%	1.8%	1.9%	0.0%	0.8%	1.2%	0.7%
		% of Total	0.0%	0.0%	0.1%	0.2%	0.0%	0.2%	0.1%	0.7%
	3	Count	0	0	0	1	0	1	2	4
		% within Platelet_ Classification	0.0%	0.0%	0.0%	25.0%	0.0%	25.0%	50.0%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	0.0%	0.0%	0.0%	1.0%	0.0%	0.4%	2.4%	0.5%
		% of Total	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.5%
	4	Count	4	3	2	8	10	17	6	50
		% within Platelet_ Classification	8.0%	6.0%	4.0%	16.0%	20.0%	34.0%	12.0%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	2.9%	4.8%	3.5%	7.7%	8.0%	6.8%	7.1%	6.1%
		% of Total	0.5%	0.4%	0.2%	1.0%	1.2%	2.1%	0.7%	6.1%
	5	Count	84	41	40	79	106	215	71	636
		% within Platelet_ Classification	13.2%	6.4%	6.3%	12.4%	16.7%	33.8%	11.2%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								

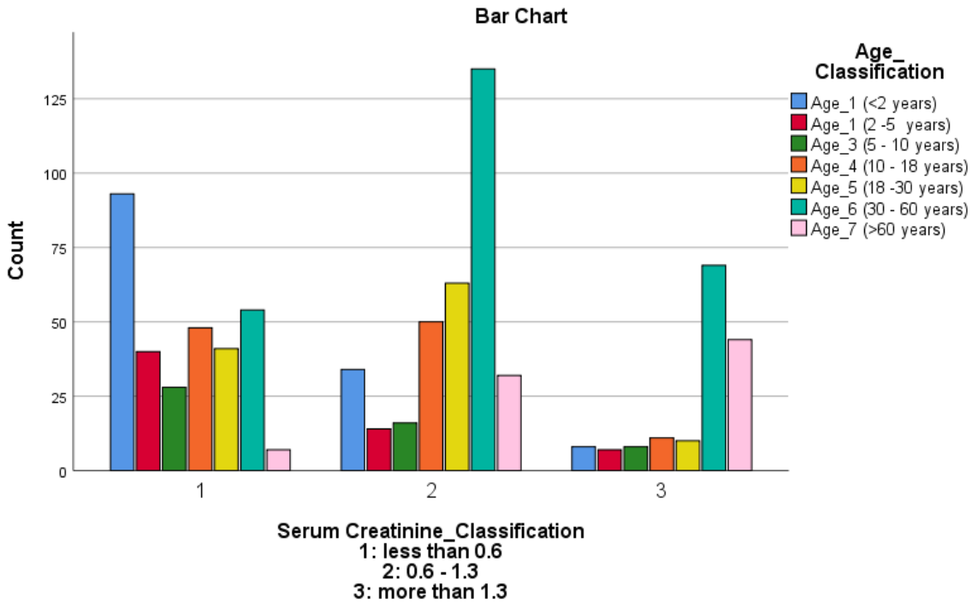
		% within Age_ Classification	61.3%	65.1%	70.2%	76.0%	84.8%	86.0%	83.5%	77.5%
		% of Total	10.2%	5.0%	4.9%	9.6%	12.9%	26.2%	8.6%	77.5%
	6	Count	49	19	14	13	9	14	4	122
		% within Platelet_ Classification	40.2%	15.6%	11.5%	10.7%	7.4%	11.5%	3.3%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	35.8%	30.2%	24.6%	12.5%	7.2%	5.6%	4.7%	14.9%
		% of Total	6.0%	2.3%	1.7%	1.6%	1.1%	1.7%	0.5%	14.9%
Total		Count	137	63	57	104	125	250	85	821
		% within Platelet_ Classification	16.7%	7.7%	6.9%	12.7%	15.2%	30.5%	10.4%	100.0%
		1: Less than 15								
		2: 15 - 30								
		3: 30 - 50								
		4: 50 - 150								
		5: 150 - 450								
		6: more than 450								
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.7%	7.7%	6.9%	12.7%	15.2%	30.5%	10.4%	100.0%



Serum Creatinine_Classification
1: less than 0.6
2: 0.6 - 1.3
3: more than 1.3 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	1	Count	93	40	28	48	41	54	7	311
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	29.9%	12.9%	9.0%	15.4%	13.2%	17.4%	2.3%	100.0%
		% within Age_ Classification	68.9%	65.6%	53.8%	44.0%	36.0%	20.9%	8.4%	38.3%
		% of Total	11.5%	4.9%	3.4%	5.9%	5.0%	6.7%	0.9%	38.3%
	2	Count	34	14	16	50	63	135	32	344

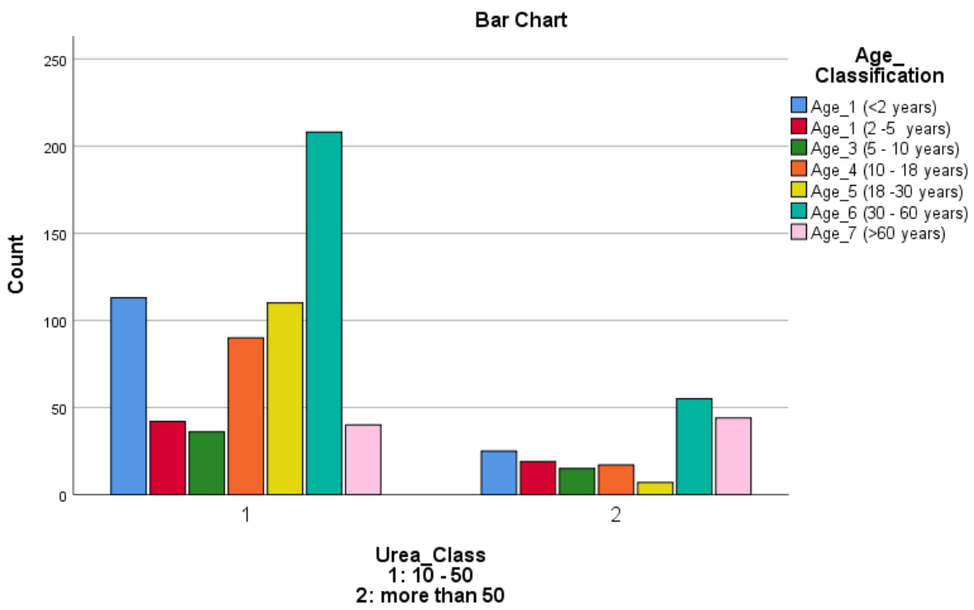
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	9.9%	4.1%	4.7%	14.5%	18.3%	39.2%	9.3%	100.0%
		% within Age_ Classification	25.2%	23.0%	30.8%	45.9%	55.3%	52.3%	38.6%	42.4%
		% of Total	4.2%	1.7%	2.0%	6.2%	7.8%	16.6%	3.9%	42.4%
	3	Count	8	7	8	11	10	69	44	157
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	5.1%	4.5%	5.1%	7.0%	6.4%	43.9%	28.0%	100.0%
		% within Age_ Classification	5.9%	11.5%	15.4%	10.1%	8.8%	26.7%	53.0%	19.3%
		% of Total	1.0%	0.9%	1.0%	1.4%	1.2%	8.5%	5.4%	19.3%
Total		Count	135	61	52	109	114	258	83	812
		% within Serum Creatinine_Classification 1: less than 0.6 2: 0.6 - 1.3 3: more than 1.3	16.6%	7.5%	6.4%	13.4%	14.0%	31.8%	10.2%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.5%	6.4%	13.4%	14.0%	31.8%	10.2%	100.0%



Urea_Class
1: 10 - 50
2: more than 50 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Urea_Class	1	Count	113	42	36	90	110	208	40	639
1: 10 - 50		% within Urea_Class 1: 10 - 50 2: more than 50	17.7%	6.6%	5.6%	14.1%	17.2%	32.6%	6.3%	100.0%
2: more than 50		% within Age_ Classification	81.9%	68.9%	70.6%	84.1%	94.0%	79.1%	47.6%	77.8%
		% of Total	13.8%	5.1%	4.4%	11.0%	13.4%	25.3%	4.9%	77.8%
	2	Count	25	19	15	17	7	55	44	182
		% within Urea_Class 1: 10 - 50 2: more than 50	13.7%	10.4%	8.2%	9.3%	3.8%	30.2%	24.2%	100.0%
		% within Age_ Classification	18.1%	31.1%	29.4%	15.9%	6.0%	20.9%	52.4%	22.2%
		% of Total	3.0%	2.3%	1.8%	2.1%	0.9%	6.7%	5.4%	22.2%
Total		Count	138	61	51	107	117	263	84	821

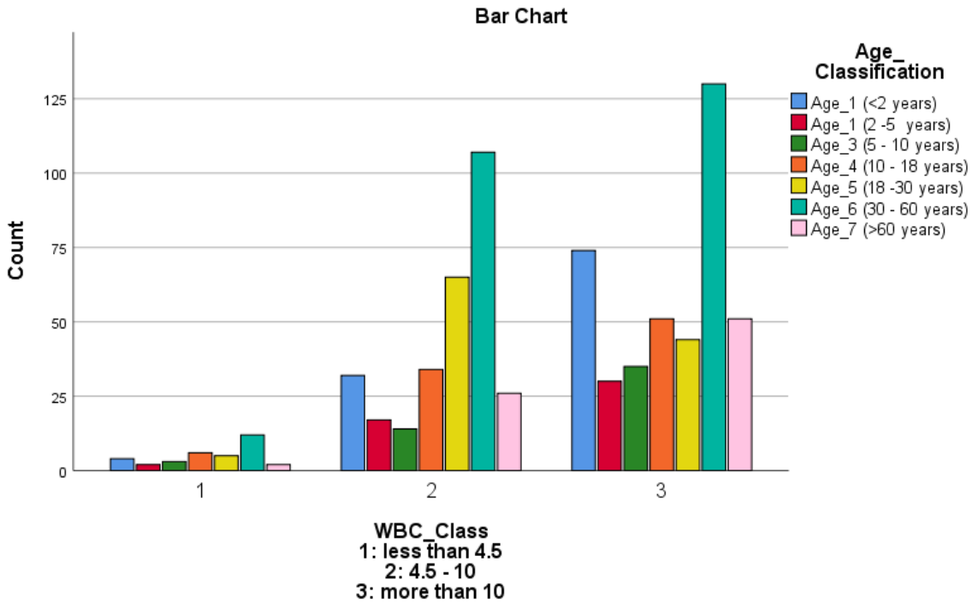
	% within Urea_Class	16.8%	7.4%	6.2%	13.0%	14.3%	32.0%	10.2%	100.0%
	1: 10 - 50								
	2: more than 50								
	% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	16.8%	7.4%	6.2%	13.0%	14.3%	32.0%	10.2%	100.0%



WBC_Class
1: less than 4.5
2: 4.5 - 10
3: more than 10 * Age_ Classification Crosstabulation

			Age_ Classification						
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
WBC_Class	1	Count	4	2	3	6	5	12	2	34
1: less than 4.5		% within WBC_Class	11.8%	5.9%	8.8%	17.6%	14.7%	35.3%	5.9%	100.0%
2: 4.5 - 10		1: less than 4.5								
3: more than 10		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	3.6%	4.1%	5.8%	6.6%	4.4%	4.8%	2.5%	4.6%

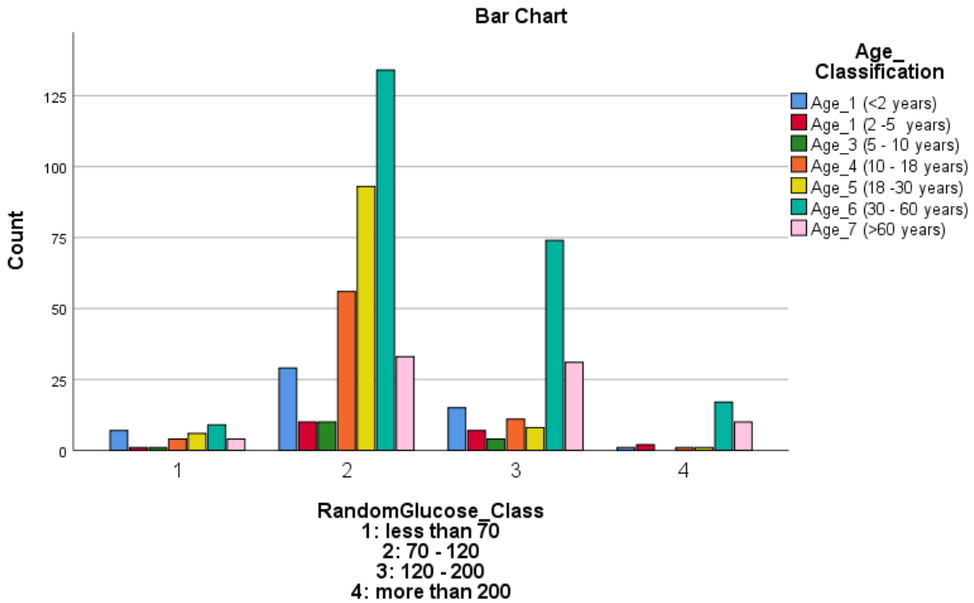
		% of Total	0.5%	0.3%	0.4%	0.8%	0.7%	1.6%	0.3%	4.6%
	2	Count	32	17	14	34	65	107	26	295
		% within WBC_Class	10.8%	5.8%	4.7%	11.5%	22.0%	36.3%	8.8%	100.0%
		1: less than 4.5								
		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	29.1%	34.7%	26.9%	37.4%	57.0%	43.0%	32.9%	39.7%
		% of Total	4.3%	2.3%	1.9%	4.6%	8.7%	14.4%	3.5%	39.7%
	3	Count	74	30	35	51	44	130	51	415
		% within WBC_Class	17.8%	7.2%	8.4%	12.3%	10.6%	31.3%	12.3%	100.0%
		1: less than 4.5								
		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	67.3%	61.2%	67.3%	56.0%	38.6%	52.2%	64.6%	55.8%
		% of Total	9.9%	4.0%	4.7%	6.9%	5.9%	17.5%	6.9%	55.8%
Total		Count	110	49	52	91	114	249	79	744
		% within WBC_Class	14.8%	6.6%	7.0%	12.2%	15.3%	33.5%	10.6%	100.0%
		1: less than 4.5								
		2: 4.5 - 10								
		3: more than 10								
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	14.8%	6.6%	7.0%	12.2%	15.3%	33.5%	10.6%	100.0%



RandomGlucose_Class
1: less than 70
2: 70 - 120
3: 120 - 200
4: more than 200 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
RandomGlucose_Class	1	Count	7	1	1	4	6	9	4	32
1: less than 70		% within RandomGlucose_Class	21.9%	3.1%	3.1%	12.5%	18.8%	28.1%	12.5%	100.0%
2: 70 - 120		1: less than 70								
3: 120 - 200		2: 70 - 120								
4: more than 200		3: 120 - 200								
		4: more than 200								
		% within Age_ Classification	13.5%	5.0%	6.7%	5.6%	5.6%	3.8%	5.1%	5.5%
		% of Total	1.2%	0.2%	0.2%	0.7%	1.0%	1.6%	0.7%	5.5%
	2	Count	29	10	10	56	93	134	33	365

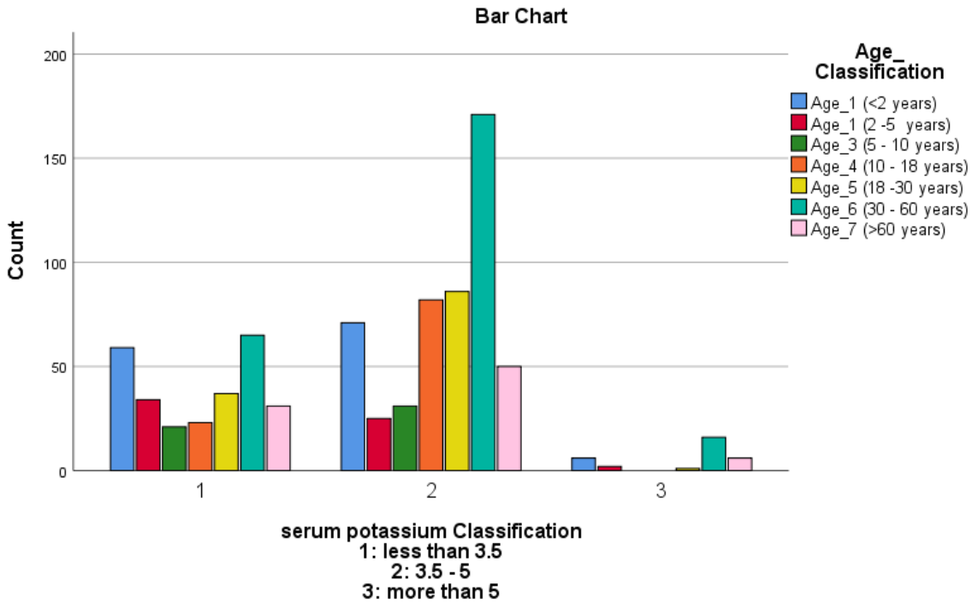
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	7.9%	2.7%	2.7%	15.3%	25.5%	36.7%	9.0%	100.0%
		% within Age_ Classification	55.8%	50.0%	66.7%	77.8%	86.1%	57.3%	42.3%	63.0%
		% of Total	5.0%	1.7%	1.7%	9.7%	16.1%	23.1%	5.7%	63.0%
	3	Count	15	7	4	11	8	74	31	150
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	10.0%	4.7%	2.7%	7.3%	5.3%	49.3%	20.7%	100.0%
		% within Age_ Classification	28.8%	35.0%	26.7%	15.3%	7.4%	31.6%	39.7%	25.9%
		% of Total	2.6%	1.2%	0.7%	1.9%	1.4%	12.8%	5.4%	25.9%
	4	Count	1	2	0	1	1	17	10	32
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	3.1%	6.3%	0.0%	3.1%	3.1%	53.1%	31.3%	100.0%
		% within Age_ Classification	1.9%	10.0%	0.0%	1.4%	0.9%	7.3%	12.8%	5.5%
		% of Total	0.2%	0.3%	0.0%	0.2%	0.2%	2.9%	1.7%	5.5%
Total		Count	52	20	15	72	108	234	78	579
		% within RandomGlucose_Class 1: less than 70 2: 70 - 120 3: 120 - 200 4: more than 200	9.0%	3.5%	2.6%	12.4%	18.7%	40.4%	13.5%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	9.0%	3.5%	2.6%	12.4%	18.7%	40.4%	13.5%	100.0%



serum potassium Classification
1: less than 3.5
2: 3.5 - 5
3: more than 5 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	1	Count	59	34	21	23	37	65	31	270
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	21.9%	12.6%	7.8%	8.5%	13.7%	24.1%	11.5%	100.0%
		% within Age_ Classification	43.4%	55.7%	40.4%	21.9%	29.8%	25.8%	35.6%	33.0%
		% of Total	7.2%	4.2%	2.6%	2.8%	4.5%	8.0%	3.8%	33.0%
	2	Count	71	25	31	82	86	171	50	516

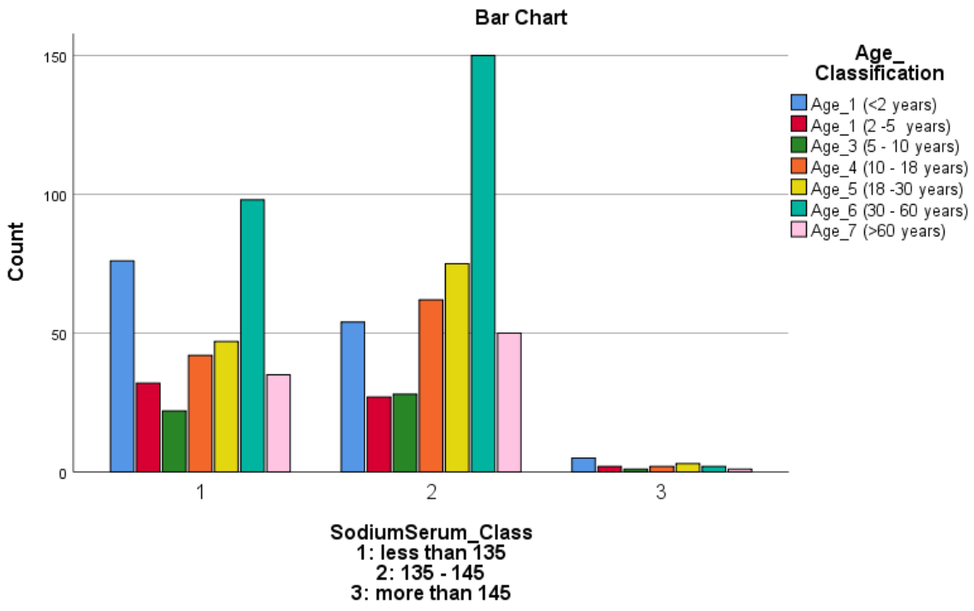
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	13.8%	4.8%	6.0%	15.9%	16.7%	33.1%	9.7%	100.0%
		% within Age_ Classification	52.2%	41.0%	59.6%	78.1%	69.4%	67.9%	57.5%	63.2%
		% of Total	8.7%	3.1%	3.8%	10.0%	10.5%	20.9%	6.1%	63.2%
	3	Count	6	2	0	0	1	16	6	31
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	19.4%	6.5%	0.0%	0.0%	3.2%	51.6%	19.4%	100.0%
		% within Age_ Classification	4.4%	3.3%	0.0%	0.0%	0.8%	6.3%	6.9%	3.8%
		% of Total	0.7%	0.2%	0.0%	0.0%	0.1%	2.0%	0.7%	3.8%
Total		Count	136	61	52	105	124	252	87	817
		% within serum potassium Classification 1: less than 3.5 2: 3.5 - 5 3: more than 5	16.6%	7.5%	6.4%	12.9%	15.2%	30.8%	10.6%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.5%	6.4%	12.9%	15.2%	30.8%	10.6%	100.0%



SodiumSerum_Class
1: less than 135
2: 135 - 145
3: more than 145 * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
SodiumSerum_Class	1	Count	76	32	22	42	47	98	35	352
1: less than 135		% within SodiumSerum_Class	21.6%	9.1%	6.3%	11.9%	13.4%	27.8%	9.9%	100.0%
2: 135 - 145		1: less than 135								
3: more than 145		2: 135 - 145								
		3: more than 145								
		% within Age_ Classification	56.3%	52.5%	43.1%	39.6%	37.6%	39.2%	40.7%	43.2%
		% of Total	9.3%	3.9%	2.7%	5.2%	5.8%	12.0%	4.3%	43.2%
	2	Count	54	27	28	62	75	150	50	446
		% within SodiumSerum_Class	12.1%	6.1%	6.3%	13.9%	16.8%	33.6%	11.2%	100.0%
		1: less than 135								
		2: 135 - 145								
		3: more than 145								

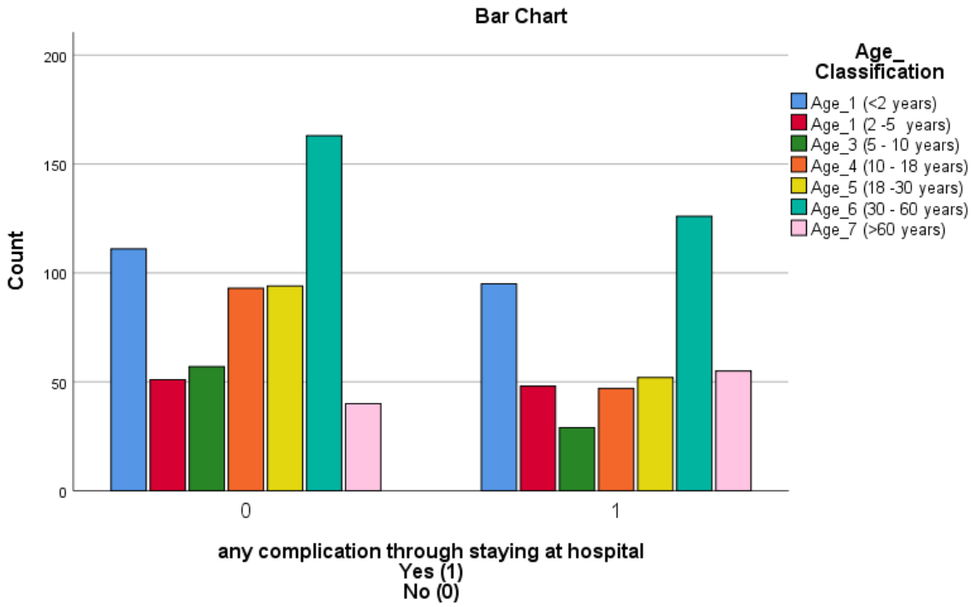
		% within Age_ Classification	40.0%	44.3%	54.9%	58.5%	60.0%	60.0%	58.1%	54.8%
		% of Total	6.6%	3.3%	3.4%	7.6%	9.2%	18.4%	6.1%	54.8%
	3	Count	5	2	1	2	3	2	1	16
		% within SodiumSerum_Class 1: less than 135 2: 135 - 145 3: more than 145	31.3%	12.5%	6.3%	12.5%	18.8%	12.5%	6.3%	100.0%
		% within Age_ Classification	3.7%	3.3%	2.0%	1.9%	2.4%	0.8%	1.2%	2.0%
		% of Total	0.6%	0.2%	0.1%	0.2%	0.4%	0.2%	0.1%	2.0%
Total		Count	135	61	51	106	125	250	86	814
		% within SodiumSerum_Class 1: less than 135 2: 135 - 145	16.6%	7.5%	6.3%	13.0%	15.4%	30.7%	10.6%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	16.6%	7.5%	6.3%	13.0%	15.4%	30.7%	10.6%	100.0%



Complications according to age Class

any complication through staying at hospital Yes (1) No (0) * Age_ Classification Crosstabulation

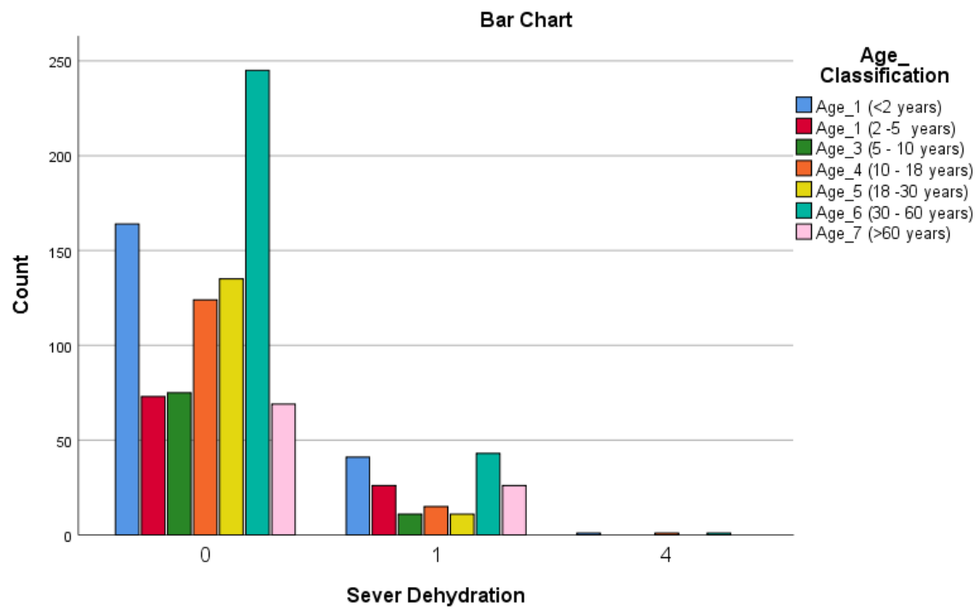
			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
any complication through staying at hospital Yes (1) No (0)	0	Count	111	51	57	93	94	163	40	609
		% within any complication through staying at hospital Yes (1) No (0)	18.2%	8.4%	9.4%	15.3%	15.4%	26.8%	6.6%	100.0%
		% within Age_ Classification	53.9%	51.5%	66.3%	66.4%	64.4%	56.4%	42.1%	57.4%
		% of Total	10.5%	4.8%	5.4%	8.8%	8.9%	15.4%	3.8%	57.4%
	1	Count	95	48	29	47	52	126	55	452
		% within any complication through staying at hospital Yes (1) No (0)	21.0%	10.6%	6.4%	10.4%	11.5%	27.9%	12.2%	100.0%
		% within Age_ Classification	46.1%	48.5%	33.7%	33.6%	35.6%	43.6%	57.9%	42.6%
		% of Total	9.0%	4.5%	2.7%	4.4%	4.9%	11.9%	5.2%	42.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within any complication through staying at hospital Yes (1) No (0)	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Sever Dehydration * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Sever Dehydration	0	Count	164	73	75	124	135	245	69	885
		% within Sever Dehydration	18.5%	8.2%	8.5%	14.0%	15.3%	27.7%	7.8%	100.0%
		% within Age_ Classification	79.6%	73.7%	87.2%	88.6%	92.5%	84.8%	72.6%	83.4%
		% of Total	15.5%	6.9%	7.1%	11.7%	12.7%	23.1%	6.5%	83.4%
	1	Count	41	26	11	15	11	43	26	173
		% within Sever Dehydration	23.7%	15.0%	6.4%	8.7%	6.4%	24.9%	15.0%	100.0%
		% within Age_ Classification	19.9%	26.3%	12.8%	10.7%	7.5%	14.9%	27.4%	16.3%
		% of Total	3.9%	2.5%	1.0%	1.4%	1.0%	4.1%	2.5%	16.3%
	4	Count	1	0	0	1	0	1	0	3
		% within Sever Dehydration	33.3%	0.0%	0.0%	33.3%	0.0%	33.3%	0.0%	100.0%
		% within Age_ Classification	0.5%	0.0%	0.0%	0.7%	0.0%	0.3%	0.0%	0.3%
		% of Total	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.3%
Total		Count	206	99	86	140	146	289	95	1061
		% within Sever Dehydration	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%

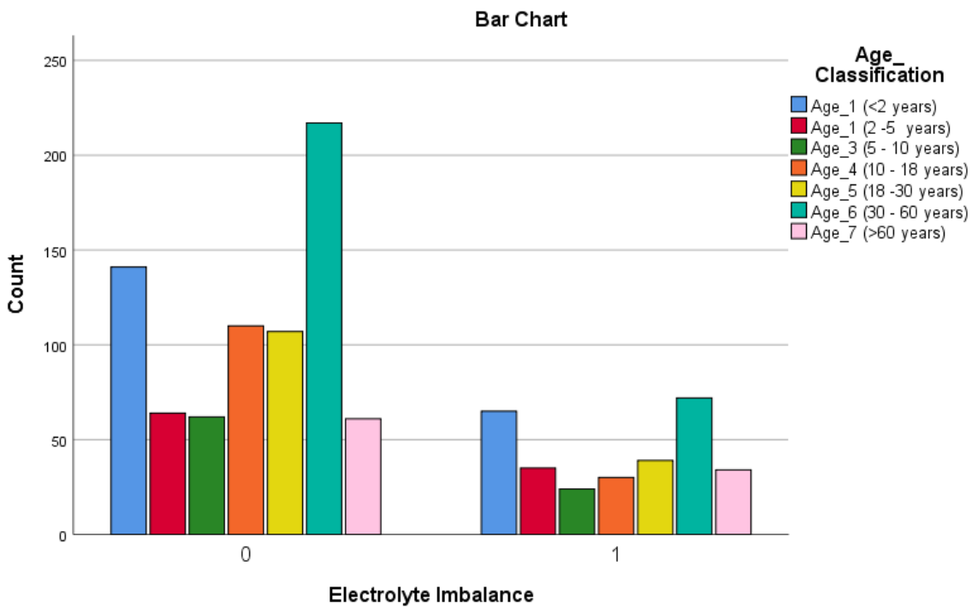
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Electrolyte Imbalance * Age_ Classification Crosstabulation

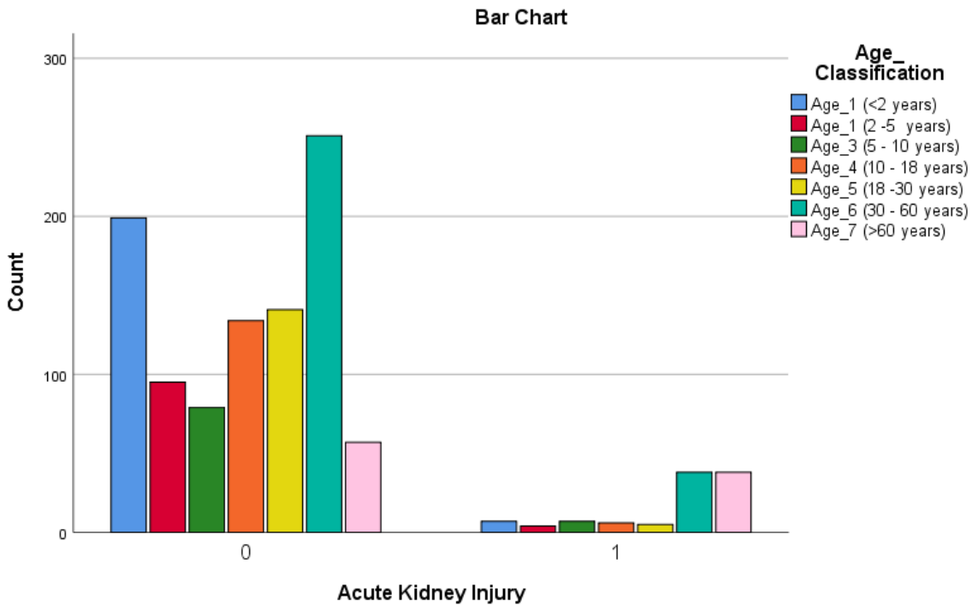
			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Electrolyte Imbalance	0	Count	141	64	62	110	107	217	61	762
		% within Electrolyte Imbalance	18.5%	8.4%	8.1%	14.4%	14.0%	28.5%	8.0%	100.0%
		% within Age_ Classification	68.4%	64.6%	72.1%	78.6%	73.3%	75.1%	64.2%	71.8%
		% of Total	13.3%	6.0%	5.8%	10.4%	10.1%	20.5%	5.7%	71.8%
	1	Count	65	35	24	30	39	72	34	299
		% within Electrolyte Imbalance	21.7%	11.7%	8.0%	10.0%	13.0%	24.1%	11.4%	100.0%
		% within Age_ Classification	31.6%	35.4%	27.9%	21.4%	26.7%	24.9%	35.8%	28.2%
		% of Total	6.1%	3.3%	2.3%	2.8%	3.7%	6.8%	3.2%	28.2%
Total		Count	206	99	86	140	146	289	95	1061
		% within Electrolyte Imbalance	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



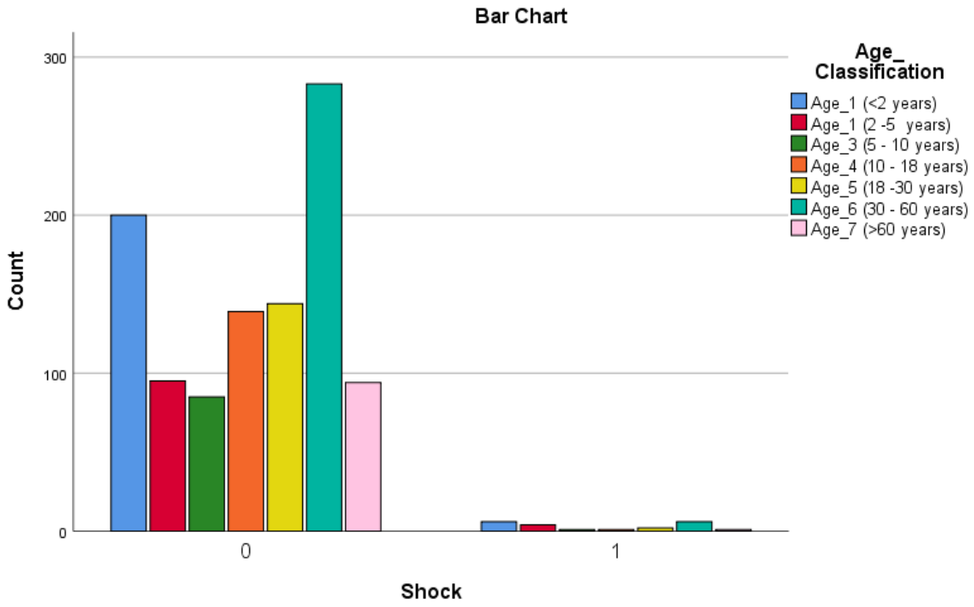
Acute Kidney Injury * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Acute Kidney Injury	0	Count	199	95	79	134	141	251	57	956
		% within Acute Kidney Injury	20.8%	9.9%	8.3%	14.0%	14.7%	26.3%	6.0%	100.0%
		% within Age_ Classification	96.6%	96.0%	91.9%	95.7%	96.6%	86.9%	60.0%	90.1%
		% of Total	18.8%	9.0%	7.4%	12.6%	13.3%	23.7%	5.4%	90.1%
	1	Count	7	4	7	6	5	38	38	105
		% within Acute Kidney Injury	6.7%	3.8%	6.7%	5.7%	4.8%	36.2%	36.2%	100.0%
		% within Age_ Classification	3.4%	4.0%	8.1%	4.3%	3.4%	13.1%	40.0%	9.9%
		% of Total	0.7%	0.4%	0.7%	0.6%	0.5%	3.6%	3.6%	9.9%
Total		Count	206	99	86	140	146	289	95	1061
		% within Acute Kidney Injury	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



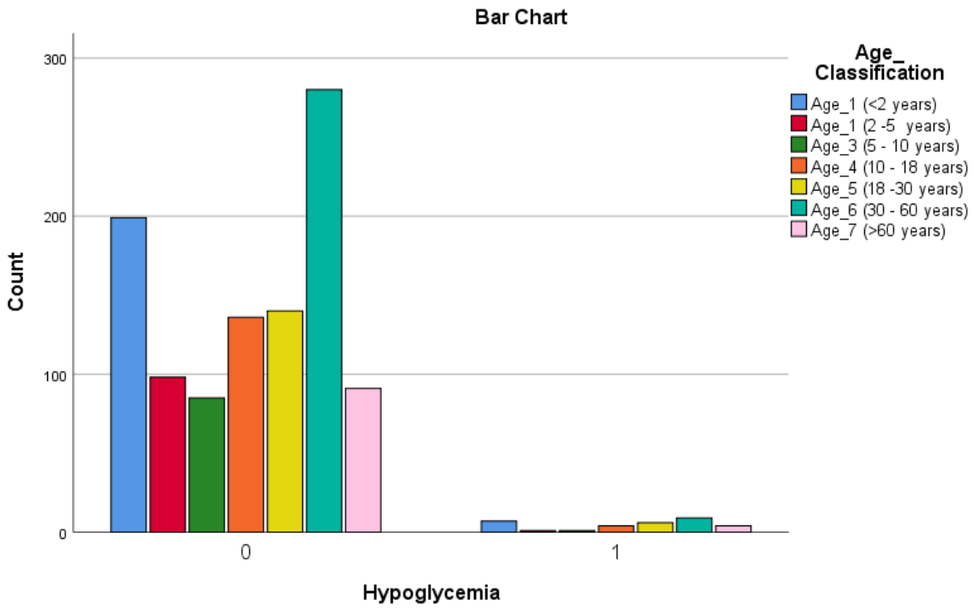
Shock * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Shock	0	Count	200	95	85	139	144	283	94	1040
		% within Shock	19.2%	9.1%	8.2%	13.4%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	97.1%	96.0%	98.8%	99.3%	98.6%	97.9%	98.9%	98.0%
		% of Total	18.9%	9.0%	8.0%	13.1%	13.6%	26.7%	8.9%	98.0%
	1	Count	6	4	1	1	2	6	1	21
		% within Shock	28.6%	19.0%	4.8%	4.8%	9.5%	28.6%	4.8%	100.0%
		% within Age_ Classification	2.9%	4.0%	1.2%	0.7%	1.4%	2.1%	1.1%	2.0%
		% of Total	0.6%	0.4%	0.1%	0.1%	0.2%	0.6%	0.1%	2.0%
Total		Count	206	99	86	140	146	289	95	1061
		% within Shock	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



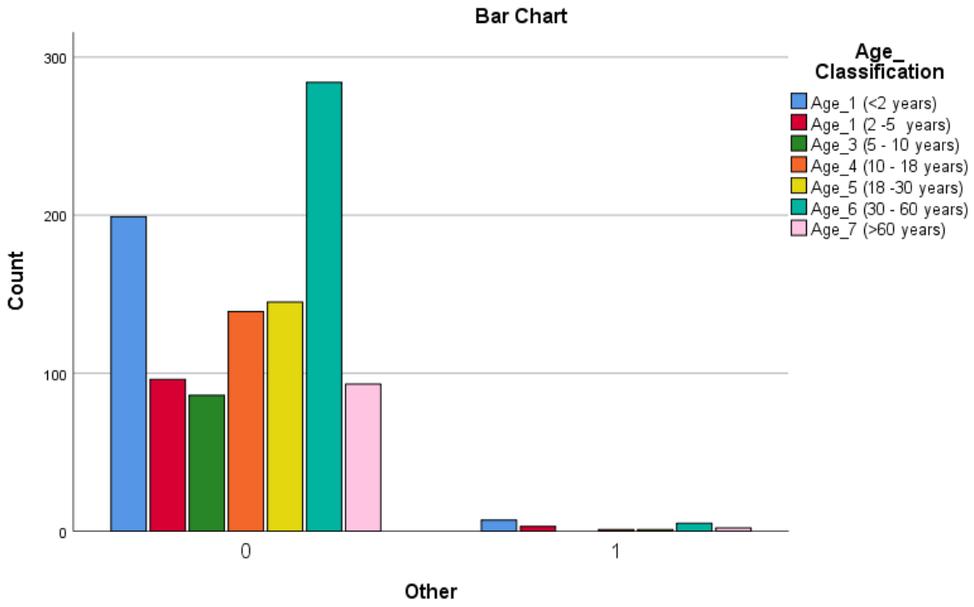
Hypoglycemia * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Hypoglycemia	0	Count	199	98	85	136	140	280	91	1029
		% within Hypoglycemia	19.3%	9.5%	8.3%	13.2%	13.6%	27.2%	8.8%	100.0%
		% within Age_ Classification	96.6%	99.0%	98.8%	97.1%	95.9%	96.9%	95.8%	97.0%
		% of Total	18.8%	9.2%	8.0%	12.8%	13.2%	26.4%	8.6%	97.0%
	1	Count	7	1	1	4	6	9	4	32
		% within Hypoglycemia	21.9%	3.1%	3.1%	12.5%	18.8%	28.1%	12.5%	100.0%
		% within Age_ Classification	3.4%	1.0%	1.2%	2.9%	4.1%	3.1%	4.2%	3.0%
		% of Total	0.7%	0.1%	0.1%	0.4%	0.6%	0.8%	0.4%	3.0%
Total		Count	206	99	86	140	146	289	95	1061
		% within Hypoglycemia	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Other * Age_ Classification Crosstabulation

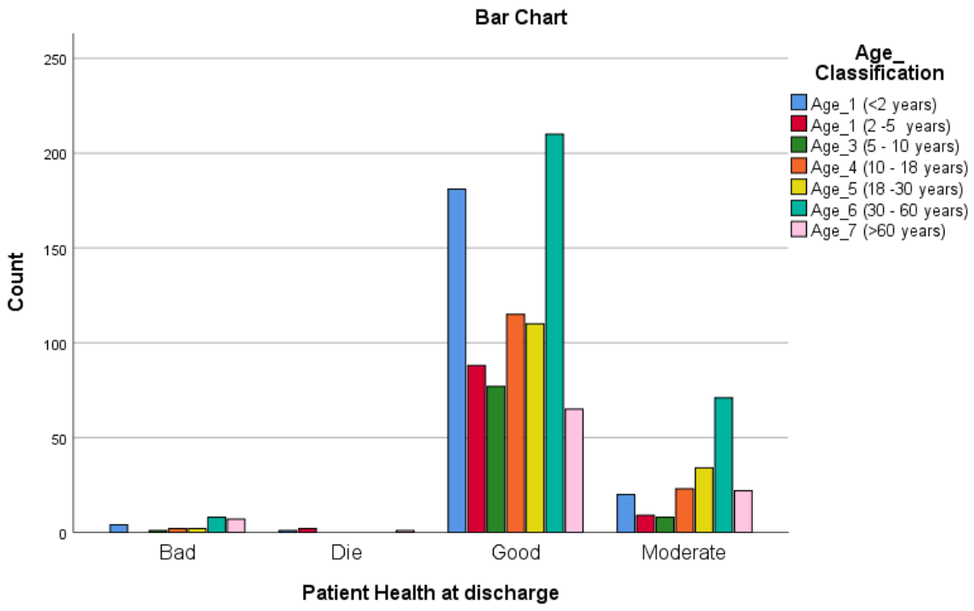
			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Other	0	Count	199	96	86	139	145	284	93	1042
		% within Other	19.1%	9.2%	8.3%	13.3%	13.9%	27.3%	8.9%	100.0%
		% within Age_ Classification	96.6%	97.0%	100.0%	99.3%	99.3%	98.3%	97.9%	98.2%
		% of Total	18.8%	9.0%	8.1%	13.1%	13.7%	26.8%	8.8%	98.2%
	1	Count	7	3	0	1	1	5	2	19
		% within Other	36.8%	15.8%	0.0%	5.3%	5.3%	26.3%	10.5%	100.0%
		% within Age_ Classification	3.4%	3.0%	0.0%	0.7%	0.7%	1.7%	2.1%	1.8%
		% of Total	0.7%	0.3%	0.0%	0.1%	0.1%	0.5%	0.2%	1.8%
Total		Count	206	99	86	140	146	289	95	1061
		% within Other	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Patient Health at discharge * Age_ Classification Crosstabulation

			Age_ Classification							
			Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Patient Health at discharge	Bad	Count	4	0	1	2	2	8	7	24
		% within Patient Health at discharge	16.7%	0.0%	4.2%	8.3%	8.3%	33.3%	29.2%	100.0%
		% within Age_ Classification	1.9%	0.0%	1.2%	1.4%	1.4%	2.8%	7.4%	2.3%
		% of Total	0.4%	0.0%	0.1%	0.2%	0.2%	0.8%	0.7%	2.3%
	Die	Count	1	2	0	0	0	0	1	4
		% within Patient Health at discharge	25.0%	50.0%	0.0%	0.0%	0.0%	0.0%	25.0%	100.0%
		% within Age_ Classification	0.5%	2.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.4%
		% of Total	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%
	Good	Count	181	88	77	115	110	210	65	846
		% within Patient Health at discharge	21.4%	10.4%	9.1%	13.6%	13.0%	24.8%	7.7%	100.0%
		% within Age_ Classification	87.9%	88.9%	89.5%	82.1%	75.3%	72.7%	68.4%	79.7%
		% of Total	17.1%	8.3%	7.3%	10.8%	10.4%	19.8%	6.1%	79.7%

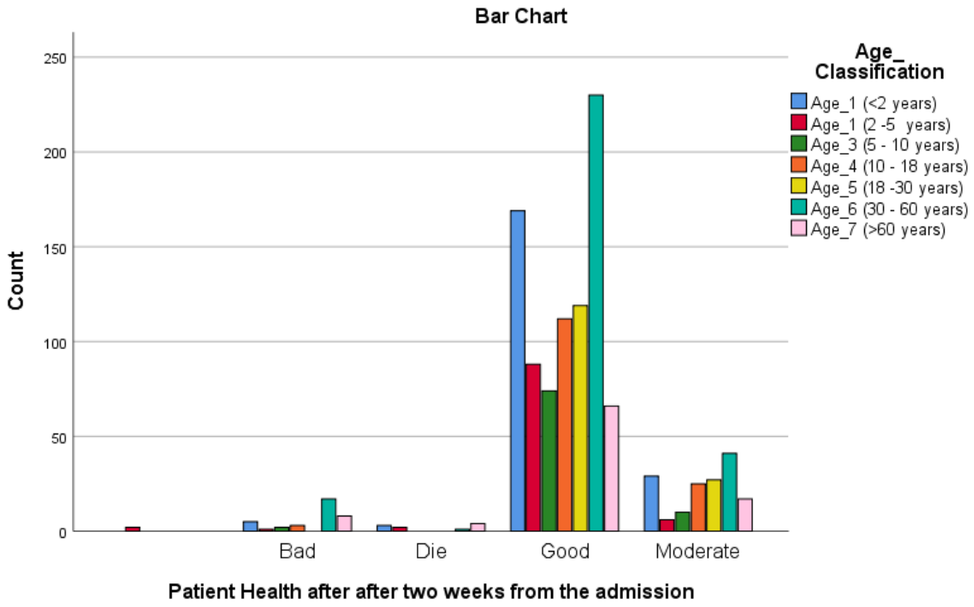
	Moderate	Count	20	9	8	23	34	71	22	187
		% within Patient Health at discharge	10.7%	4.8%	4.3%	12.3%	18.2%	38.0%	11.8%	100.0%
		% within Age_ Classification	9.7%	9.1%	9.3%	16.4%	23.3%	24.6%	23.2%	17.6%
		% of Total	1.9%	0.8%	0.8%	2.2%	3.2%	6.7%	2.1%	17.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within Patient Health at discharge	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



Patient Health after two weeks - one month from the admission * Age_ Classification Crosstabulation

		Age_ Classification							
		Age_1 (<2 years)	Age_1 (2 -5 years)	Age_3 (5 - 10 years)	Age_4 (10 - 18 years)	Age_5 (18 -30 years)	Age_6 (30 - 60 years)	Age_7 (>60 years)	Total
Patient Health after after two weeks from the admission	Count	0	2	0	0	0	0	0	2
	% within Patient Health after two weeks from the admission	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

		% within Age_ Classification	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
		% of Total	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
	Bad	Count	5	1	2	3	0	17	8	36
		% within Patient Health after two weeks from the admission	13.9%	2.8%	5.6%	8.3%	0.0%	47.2%	22.2%	100.0%
		% within Age_ Classification	2.4%	1.0%	2.3%	2.1%	0.0%	5.9%	8.4%	3.4%
		% of Total	0.5%	0.1%	0.2%	0.3%	0.0%	1.6%	0.8%	3.4%
	Die	Count	3	2	0	0	0	1	4	10
		% within Patient Health after two weeks from the admission	30.0%	20.0%	0.0%	0.0%	0.0%	10.0%	40.0%	100.0%
		% within Age_ Classification	1.5%	2.0%	0.0%	0.0%	0.0%	0.3%	4.2%	0.9%
		% of Total	0.3%	0.2%	0.0%	0.0%	0.0%	0.1%	0.4%	0.9%
	Good	Count	169	88	74	112	119	230	66	858
		% within Patient Health after two weeks from the admission	19.7%	10.3%	8.6%	13.1%	13.9%	26.8%	7.7%	100.0%
		% within Age_ Classification	82.0%	88.9%	86.0%	80.0%	81.5%	79.6%	69.5%	80.9%
		% of Total	15.9%	8.3%	7.0%	10.6%	11.2%	21.7%	6.2%	80.9%
	Moderate	Count	29	6	10	25	27	41	17	155
		% within Patient Health after two weeks from the admission	18.7%	3.9%	6.5%	16.1%	17.4%	26.5%	11.0%	100.0%
		% within Age_ Classification	14.1%	6.1%	11.6%	17.9%	18.5%	14.2%	17.9%	14.6%
		% of Total	2.7%	0.6%	0.9%	2.4%	2.5%	3.9%	1.6%	14.6%
Total		Count	206	99	86	140	146	289	95	1061
		% within Patient Health after two weeks from the admission	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%
		% within Age_ Classification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	19.4%	9.3%	8.1%	13.2%	13.8%	27.2%	9.0%	100.0%



STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1,2
Introduction			**3**
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			**4 , 5**
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	4
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	4
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4 , 5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	4
Study size	10	Explain how the study size was arrived at	4
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	5
		(*d*) If applicable, explain how loss to follow-up was addressed	5
		(*e*) Describe any sensitivity analyses	5
Results			5 , 6

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	5
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5
		(b) Indicate number of participants with missing data for each variable of interest	
		(c) Summarise follow-up time (eg, average and total amount)	
Outcome data	15*	Report numbers of outcome events or summary measures over time	5 , 6
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	5 , 6
		(*b*) Report category boundaries when continuous variables were categorized	
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	
Discussion			6
Key results	18	Summarise key results with reference to study objectives	
Limitations			3
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	
Other information			7
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	7

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.