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Table of Contents	i
Journal of Health and Medical Sciences Editorial Board	ii
Chest Pain Among Adults Presenting at the A&E Department of a Public Tertiary Health Care Institution During a 2-Year Period Mandreker Bahall, George Legall	1
God's Presence is Enshrouded with Electro-Magnetic Properties: A Psychophysical Study Desmond Ayim-Aboagye	15

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Chest Pain Among Adults Presenting at the A&E Department of a Public Tertiary Health Care Institution During a 2-Year Period

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Abstract

Evaluating chest pain is challenging due to the because of urgency of its management, resource constraints in highly stressful environments, inadequate information, and inexperienced clinical staff. The aim of this study was to examine the emergency diagnosis, presenting symptoms, treatment, and dispatch of adult patients with chest pain at the emergency department of a public healthcare institution in Trinidad and Tobago over a 2-year period. The target population comprised individuals at least 18 years old presenting with chest pain at the emergency department of a public health care institute in Trinidad and Tobago. Data were obtained solely from accident and emergency (A&E) records, including special notes when applicable, and were analyzed with SPSS version 23 (IBM, Armonk, New York, NY, USA) using descriptive and inferential statistics. Patients were primarily mainly female (n = 1058, 51.2%) and Indo-Trinbagonian (n = 1174; 56.8%). The mean age was 53.4 years (standard deviation [SD] =16.76); with more than two-fifths in the 45–64 age group (n =876, 42.3%). Hypertension (n = 941, 45.5%) was the leading comorbidity, followed by diabetes (n = 658, 31.8%) and ischemic heart disease (IHD) (n = 541, 26.3%). Only 13.3% (n=274) smoked, 8.8% (n= 181) used alcohol. Presenting symptoms were due to shortness of breath (n= 875, 42.3%), nausea (n = 417, 20.2%), and palpitations (n = 364, 17.6%). Twenty-two (1.1%) patients presented with atypical chest pain and 103 (5.0%), with classical chest pain. Among the entire sample, medical diagnoses were muscular pain (n = 86, 4.2%), followed by GERD (n = 48, 2.3%), and acute coronary syndrome (ACS) (n = 77, 3.7%). Pulmonary embolism and aortic dissection occurred in 1 and 0 patients, respectively. Most patients (n = 1899, 91.8%) had no documented diagnosis. Among the 228 (11.0%) patients triaged, the mean hours were 20.1 (SD =7.38). Post-triage treatments included aspirin (n = 482, 23.3%), clopidogrel (n = 450, 21.8%) and heparin (n=456, 22%). Most (n=1179, 57%) participants had no dispatch documentation; 24.4% (n = 505) were dispatched to the medical ward and 1.7% (n=35) were dispatched to the cardiac ward. Chest pain due to ACS accounted for 3.7% of cases (n = 77). Approximately one-quarter of patients were treated with one antiplatelet (n = 482, 23.3%). A sizeable proportion of patients was without clear documentation of diagnosis (n = 1899, 91.8%) or dispatch (n = 1179, 57.0%). The implementation of standardized

clinical pathways and templates within a dedicated chest pain evaluation area is essential for optimizing care, ensuring timely treatment, and following noncardiac cases.

Keywords: Chest Pain, Chest Pain Unit/Practice, Emergency, Emergency Screening Tool

1. Introduction

Chest pain is a frequent presentation in emergency departments (EDs) worldwide. In Trinidad, chest pain accounts for 8.5% of emergency admissions (Bahall, 2021). The principal clinical goal is prompt identification or exclusion of potentially life-threatening causes. Clinicians must also identify non-cardiac causes (e.g., musculoskeletal, gastrointestinal, or psychological), which account for 44.7% (Wertli et al., 2019) to 55.1% (Khand et al., 2023) of all chest pain presentations. Many patients are treated and discharged, some are admitted, and the remainder are followed up as outpatients. Life-threatening conditions such as aortic dissection, pericarditis, pulmonary embolism, and myocardial ischemia (Kontos et al., 2010) are critical and must be identified early to prevent morbidity and mortality, treat and prevent complications (Hamm et al., 1997) and increase survival (Beck et al., 2015). However, misdiagnosis continues to occur, with acute myocardial infarction (AMI) missed in up to 2.1% of ED cases (Schull et al., 2006), pulmonary embolism in 7.5% of cases (Kwok et al., 2022) and acute aortic dissection in 14.1% (Zhan et al., 2012) to 33.8% (Lovatt et al., 2022) of cases. Misdiagnosis may result from physician-related factors such as limited experience, inadequate histories, or misinterpretation of ECGs, which further exacerbate these risks (Rusnak et al., 1989). Other contributors to misdiagnosis include atypical symptom presentation, lack of classic clinical features and presence of coexisting conditions (Lovatt et al., 2022). In low- and middle-income countries, suboptimal management is amplified: approximately 55% of patients with chest pain in a major Pakistani ED underwent ECGs, and fewer than 5% received cardiac enzyme testing in some reported cohorts (Paichadze et al., 2015). In addition, patients with a lower socioeconomic status are reportedly 'disproportionally affected, exhibiting longer wait times, less frequent use of diagnostic tests, and higher rates of revisits and adverse outcomes, even in universal healthcare systems (Herlitz et al., 2023).

Caribbean countries have similar barriers and challenges in ED settings, such as insufficient materials and resources, delayed flow of patients, increased workload, and shortage of staff and skills (De Freitas et al., 2020). Inadequate elicitation and documentation (Kachalia et al., 2007) of medical history and physical examinations can directly contribute to diagnostic errors and death. Other factors that compromise care include incorrect interpretation of diagnostic tests, inadequate handoffs, excessive workloads (Kachalia et al., 2007) and inadequate knowledge/skill/reasoning (Newman-Toker et al., 2022). The necessity for proper evaluation may also prevent "avoidable admissions" without incurring significant costs to the patient or healthcare system (Groarke et al., 2013) or even avoid unnecessary admissions (Bhatti et al., 2019). The study investigated patients who presented to the emergency department with chest pain. The specific objectives were (1) to estimate the prevalence of symptom presentation; (2) to determine sociodemographic characteristics; (3) to determine the diagnosis, treatment, and dispatch of patients; and (4) to determine any associations between symptoms/diagnosis and sociodemographic factors.

2. Material and Methods

This study was retrospective in nature and included all adults presenting with self-diagnosed chest pain at the Accident and Emergency (A&E) Department of the largest public tertiary health care institute in Trinidad and Tobago during a 2-year period from 2015 to 2016. No attempt was made to determine a sample because a sampling frame was unavailable for the random selection of participants.

Before data collection, all staff members (nurses, doctors, clerks, etc.) were briefed on the nature of the study and the importance of identifying and retrieving accurate information. Data were obtained from a sample of patient files accessible from the A&E Department of the hospital. Records of all patients with chest pain—obtained from the registration book, which included patients' names and diagnoses—were reviewed on a daily basis, except on weekends and public holidays. The inclusion criterion was an age of at least 18 years. This study had no exclusion

criteria. Data on sociodemographic variables were collected by using a questionnaire (9) and included age, sex, ethnicity, marital status, employment status, monthly income, height, weight, waist and hip circumference, presenting symptoms and severity of chest pain (26), self-reported medical history (14), admission and time profile (7), ECG findings (1), blood investigations (13), other tests (4), ACS scores (3), A&E diagnosis (9), A&E treatment (9) and A&E dispatch (5).

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) v23 via descriptive and inferential data analysis methods. Descriptive methods included frequency and percentage distribution tables, graphs, charts, and selected summary statistics. Inferential methods included 95% confidence intervals for the mean and proportion, hypothesis testing, including analysis of variance (ANOVA), and nominal and ordinal logistic regressions.

Ethical approval was granted on April 28, 2015, by the Clinical Governance and Ethics Committee of the South-West Regional Health Authority of Trinidad and Tobago.

3. Results

3.1 Demographics

Sex was nearly equally divided between male ($n = 1006$, 48.6%) and female ($n = 1058$, 51.2%) and patients ranged in age from 18 years to over 75 years (Table I). In particular, the percentage of patients 75 years or older ($n = 211$; 10.2%) was nearly twice the percentage of patients aged 18–24 years ($n = 111$; 5.4%). More than one-half of patients were of Indo-Trinbagonian descent ($n = 1174$; 56.8%; Table 1).

Table 1: Sociodemographic characteristics

Variable	n	%
Sex		
Male	1006	48.6
Female	1058	51.2
Unknown	4	0.2
Age group (y)		
18–24	111	5.4
25–34	242	11.7
35–44	254	12.3
45–54	435	21.0
55–64	441	21.3
65–74	373	18.0
75 or older	211	10.2
Unknown	1	0.1
Ethnicity		
Afro-Trinbagonian	586	28.3
Indo-Trinbagonian	1174	56.8
Mixed	143	6.9
Other	37	1.8
Not stated	128	6.2

The mean age was 53.4 years (SD = 16.76 years), with the exception of individuals aged 75 years and older. The number of persons presenting increased with increasing age category. The ANOVA showed no difference between the mean ages of male and female participants ($p = 0.304$) or among any of the four ethnic groups ($p = 0.991$).

3.2 Medical History

3.2.1 Comorbidities of Chest Pain

Hypertension ($n = 941$, 45.5%), previous heart attack ($n = 694$, 33.6%), diabetes ($n = 658$, 31.8%), and ischemic heart disease (IHD) ($n = 541$, 26.3%) were the most comorbid conditions (Table 2).

Table 2: Comorbidities and Selected Lifestyle Habits

Comorbidity/Lifestyle	Atypical & Classical	Not classified	All
	n = 1025	(n = 1042)	(n = 2067)
Hypertension	39 (3.0)	902 (86.6)	941 (45.5)
Previous heart attack **	52 (5.1)	642 (61.5)	694 (33.6)
Diabetes	22 (2.2)	636 (61.0)	658 (31.8)
IHD	19 (1.9)	522 (50.1)	541 (26.3)
Renal Insufficiency	1 (0.1)	62 (6.0)	63 (3.1)
Family History of heart disease	1 (0.1)	19 (1.8)	20 (1.0)
Hypercholesterolemia **	1 (0.1)	16 (1.5)	17 (0.8)
Abdominal obesity	0 (0.0)	9 (0.9)	9 (0.4)
Smoking	9 (0.9)	265 (25.4)	274 (13.3)
Alcohol consumption	7 (0.7)	174 (16.7)	181 (8.8)
Other	7 (0.7)	0 (0.0)	7 (0.3)

NA: not applicable

**Self-reported history of heart attack may be inaccurate as some individuals equate a previous hospital admission for chest pain with having had a myocardial infarction, despite the absence of a confirmed diagnosis. Some patients may similarly believe that they have hypercholesterolemia simply because they are prescribed cholesterol-lowering therapy.

3.2.2 Lifestyle and Exercise Habits

Smoking ($n = 274$; 13.3%) was the leading self-reported lifestyle-related risk factor, followed by alcohol consumption ($n = 181$, 8.8%) and abdominal obesity ($n = 9$, 0.4%). More than four-fifths of patients ($n = 1737$; 56.1%) reported not consuming fruit and vegetables daily; the remaining 331 patients did not respond.

3.3 Presenting Symptoms

Most patients ($n = 875$, 42.3%) presented with shortness of breath, followed by nausea ($n = 417$, 20.2%), palpitations ($n = 364$, 17.6%), light-headedness ($n = 245$, 11.9%), and vomiting ($n = 207$, 10.0%). Nearly one-third of patients ($n = 694$; 33.6%) reported having experienced at least one previous heart attack (Table 3).

Table 3: Symptoms on Presentation at a Hospital A&E Department

Presenting Symptom	Status		
	Classified n = 125	Not classified (n =1942)	All
Palpitations	20 (16.0)	344 (17.5)	364 (17.6)
Breathlessness	0 (0.0)	3 (0.2)	3 (0.2)

Nausea	17 (13.6)	400 (20.6)	417 (20.2)
Light-headedness	15 (12.0)	230 (11.8)	245 (11.9)
Sweating	8 (6.4)	105 (5.4)	113(5.5)
Fever	5 (4.0)	114(5.9)	119 (5.8)
Shortness of breath	43 (34.4)	832 (42.8)	875(42.3)
Vomiting	7 (5.6)	200 (10.3)	207 (10.0)
Near faint	0 (0.0)	4 (0.2)	4 (0.2)
Syncope	5(3.2)	26 (1.3)	31 (1.5)
Blackout	0 (0.0)	1 (0.1)	1(< 0.1)
Anxiety	0 (0.0)	6 (0.3)	6 (0.3)
Pleuritic pain	2 (1.6)	21 (1.1)	23(1.1)
Coughing	9 (7.2)	178 (9.2)	187 (9.1)

3.4 Associations Between Sociodemographic Characteristics and Health Conditions

Chi-square tests revealed the following significant associations (Table 4):

1. Sex and palpitations ($p = 0.011$)
2. Age group and nausea ($p \leq 0.001$)
3. Age group and fever ($p = 0.002$)
4. Sex and fatigue ($p = 0.048$)
5. Age group and sweating ($p = 0.032$)
6. Age group and pleuritic pain ($p = 0.026$)
7. Age group and coughing ($p = 0.015$)
8. Age and shortness of breath ($p = 0.001$)

Table 4 shows that age was associated with six symptoms, including nausea, fever, and sweating, whereas sex was associated with palpitations and fatigue only.

Table 4: The p-values for tests of Association

Health condition	Age	Sex
Palpitations	0.5273	0.011*
Nausea	$\leq 0.001^*$	0.051
Vomiting	0.677	0.524
Fever	0.002*	0.113
Fatigue	0.395	0.048*
Sudden onset of chest pain	0.710	0.399
Syncope	0.266	0.717
Sweating	0.032*	0.081
Pleuritic pain	0.026*	0.976
Coughing	0.015*	0.375
Near faint	0.682	0.993
Blackout	0.308	0.630
Shortness of breath	0.001*	0.869

Breathlessness	0.825	0.871
Anxiety	0.36990360	0.918
Light-headedness	0.909	0.187
Wheezing	0.174	0.106

3.5 Predictors of Presenting Conditions

Chi-square analysis and subsequent logistic regression identified the predictors of presentation at the A&E with at least one symptom: palpitations, fever, or cough (Table 5).

Table 5: Predictors of Palpitations, Fever, and Coughing

Symptom	Associated with	A Predictor of	OR	p-value	95% CI for OR		
					Lower	Upper	
Palpitations	sex	Yes					
		Male	0.601	0.001	0.446	0.81	
		Female	1		.		
Fever	Age group	Yes					
		18-24	1.972	0.017	1.131	3.438	
		25-34	1.874	0.008	1.745	2.992	
		35-44	1.800	0.013	1.131	2.866	
		45-54	1.809	0.007	1.179	2.779	
		55-64	1.037	0.874	0.662	1.624	
		65-74	1.537	0.157	0.987	2.394	
		8	75+	1			
Coughing	Age group	Yes					
		18-24	1.694	0.048	1.006	2.852	
		25-34	1.859	0.004	1.213	2.849	
		35-44	1.461	0.086	0.948	2.25	
		45-54	1.499	0.065	0.977	2.151	
		55-64	1.054	0.755	0.74	1.579	
		65-74	1.354	0.144	0.902	2.032	
		8	75+	1			
SOB	Age group	Yes					
		18-24	1.429	0.34	0.687	2.974	
		25-34	1.616	0.110	0.897	2.915	
		35-44	1.406	0.252	0.785	2.519	
		45-54	1.788	0.030	1.057	3.025	
		55-64	1.151	0.598	0.681	1.984	
		8	65-74	1.669	0.063	0.972	2.863
		8	75+	1			

The following were revealed through corresponding odds ratios (ORs):

Sex was a predictor of palpitations (p =0.001). In particular, women were almost twice as likely to present with this condition than men.

Age group was predictor of presenting with fever:

Among patients in the 18- to 24-year-old and 25- to 34-year-old age groups, compared with patients 75 years or older, the odds of presenting with fever decreased with increasing age.

Age group was predictor of presenting with coughing.

In particular, among patients 18–24 and 25–34 years old. compared to patients aged 75 years or older, the odds presenting with coughing decreased with increasing age.

Age group was predictor of presenting at the A&E with shortness of breath.

The odds of shortness of breath among patients 45–54 years of age were significantly higher than those of patients 75 years of age or older

3.6 A & E Diagnoses

The diagnostic status was not documented in 1899 (91.8%) of persons who presented at A&E with chest pain. Table VI. Muscular pain (n = 86, 4.2%) was the leading diagnosis, followed by gastroesophageal reflux disease (GERD) (n = 48, 2.3%) and Unstable Angina (n = 43, 2.1%). Pulmonary Embolism (n =1, 0.1%) was the least prevalent. None of these patients had AD (Table 6).

Table 6: Emergency Diagnosis

Diagnosis	n	%
STEMI	16	0.8
Non-STEMI	18	0.9
Unstable angina	43	2.1
Atypical chest pain	22	1.1
Muscular pain	86	4.2
Pulmonary embolism	1	0.1
GERD	48	2.3
Undocumented*	1899	91.8

NB. Persons may have ≥1 diagnosis; therefore the total may be >2068 and >100%.

*May include patients with atypical chest pain.

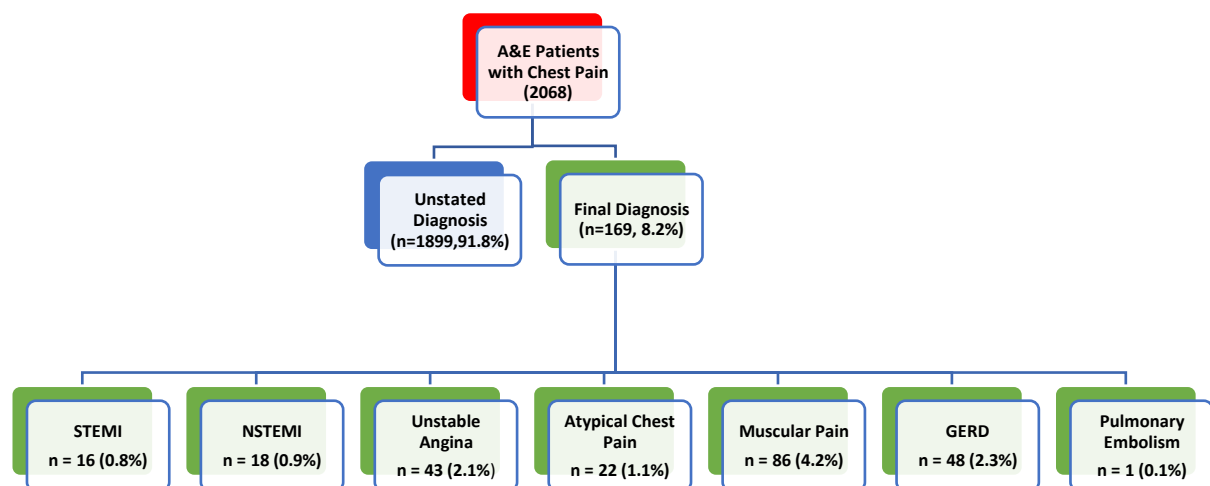


Figure 1: Emergency medical diagnosis

A&E, accident and emergency; STEMI, ST-elevation myocardial infarction; NSTEMI, non-ST-elevation myocardial infarction; GERD, gastroesophageal reflux disease

3.7 Treatment/Triage Time

Table 7 shows the length of time (in hours) from arrival at A&E to the start of triage for the 228 patients for whom both figures were recorded by age group, male sex, female sex, and the combined sex.

Table 7: Time (Hours) from A&E Arrival to Triage, based on triage patient age and sex

Sex	Age	n	Minimum	Median	Maximum	Mean (SD)
Male	18–24	2	23.7	23.7	23.7	23.7 (0.01)
	25–34	16	0.1	23.5	23.9	18.9 (8.65)
	35–44	11	0.0	23.8	24.0	21.6 (7.17)
	45–54	22	0.1	23.6	24.0	19.0 (8.65)
	55–64	35	0.0	23.5	23.9	21.0 (6.35)
	65+	20	0.1	23.1	23.9	19.3 (8.37)
	Not stated	12	11.9	23.6	23.9	22.2 (3.53)
	All ages	118	0.0	23.6	24.0	20.3 (7.30)
Female	18–24	7	0	23.6	23.9	16.5 (9.74)
	25–34	16	1.1	23.6	24.0	21.2 (6.00)
	35–44	16	0.1	23.8	24.0	20.1(8.22)
	45–54	15	0	23.6	24.3	17.7(10.10)
	55–64	20	0.1	23.7	24.0	21.1(6.22)
	65+	22	6.9	23.4	23.9	20.7(5.33)
	Not stated	14	0.2	22.4	23.9	18.4(8.63)
	All ages	110	0	23.6	24.0	19.8(7.48)
Ethnicity	Afro-	58	0.0	23.7	24.0	20.3(7.63)
	Indo	145	0.0	23.6	24.0	19.7(7.56)
	Mixed	15	8.5	23.7	24.0	22.1(4.01)
	Other	1	16.5	16.5	16.5	16.5(9.15)
	Not stated	9	0.02	23.3	23.9	20.3(7.73)
	All	228	0.0	23.6	24.0	20.1(7.38)

ANOVA showed no statistically significant differences between or among the mean times to triage of male and female patients ($p = 0.692$), among the seven age groups ($p = 0.704$); or among the four ethnic groups ($p = 0.704$).

3.7.1 Treatments

Post-triage treatments administered at A&E included the three leading treatments: aspirin ($n=482$, 23.3%), clopidogrel ($n=450$, 21.8%), and heparin ($n= 456$, 22%; Table 8).

Table 8: Treatments

Treatment	n	%
Aspirin	482	23.3

Clopidogrel	450	21.8
Warfarin	103	5.0
Simvastatin	1	<1.0
Heparin	456	22.0
Beta blocker	11	0.5
Thrombolysis	4	0.2
Other	673	32.5

3.8 A&E Dispatch

Dispatch information was unavailable for 1179 (57.0%) patients presenting to the A&E department with chest pain (Fig.2). Most, 24.4% (n = 505) patients were dispatched to the medical ward, 11.3% (n =234) were discharged fully, and less than 1% each were sent home with review and with instructions to attend the clinic, respectively.

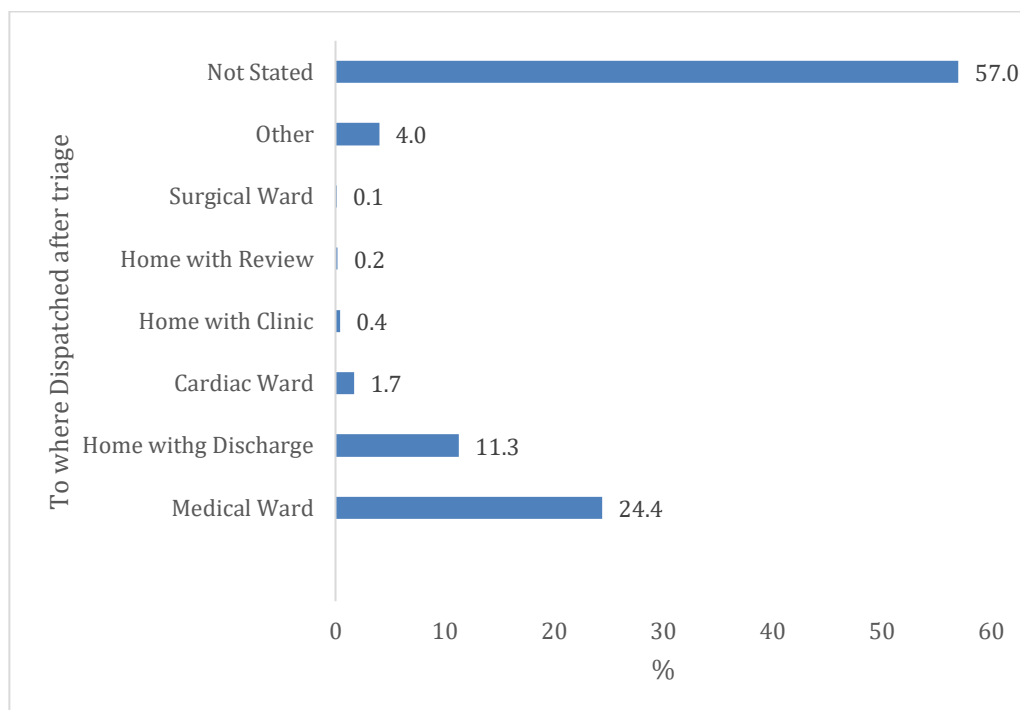


Figure 2: Patient Triage Dispatch

4. Discussion

The study participants were primarily female (n = 1058, 51.2%), between 45 and 64 years (n = 876, 42.3%), and Indo-Trinbagonian (n=1174, 56.8%). These demographics were similar to other studies conducted in Pakistan which showed that most patients were male (60%), and the mean age was 42 years (Paichadze et al., 2015). Another study reported a male-to-female ratio of 2:1 (Fouda et al., 2023). The overall mean age of the participants was 53.4 (SD = 16.76), which was similar to the findings of previous studies which reported mean ages of 53.2 years (Chanda et al., 2023) and 56.7 years (Jayasekera et al., 2024).

Patients were primarily hypertensive (n = 941, 45.5%), diabetic (n = 658, 31.8%), and had a history of ischemic heart disease (IHD) (n = 541, 26.3%). Chanda et al. (2003) similarly found the prevalence of hypertension, diabetes and coronary artery disease was 35.5%, 30.5%, and 19.5, respectively. Mateen et al. (2024) found the prevalence of hypertension, diabetes and family history of IHD among patients with cardiac chest pain was 67%, 40%, and

46%, respectively. Approximately one-third of the participants (n = 694, 33.6%) in our study reported experiencing at least one previous heart attack. However, such self-reported history may be inaccurate as some individuals equate previous hospital admission for chest pain with having had a myocardial infarction. The Caribbean region has the highest prevalence of elevated blood pressure in the Americas, with estimates ranging from 20.9% to 27.1% (Caribbean Public Health Agency, 2021). In particular, studies conducted in Trinidad and Tobago, report hypertension rates exceeding the regional average (Alvarado, 2023) and diabetes mellitus in approximately 14.5% of the population (Office of the President of the Republic of Trinidad and Tobago, 2019). Lifestyle factors include abdominal obesity (n = 9; 0.4%), smoking (n = 274; 13.3%), and alcohol consumption (n = 181; 8.8%). Compared with our study, a similar investigation of the clinico-epidemiological profile of patients presenting with acute chest discomfort at the ED in India reported a higher smoking prevalence (48.5%) but a lower rate of alcohol consumption (3.5%) (Chanda et al., 2023). None of the participants reported daily consumption of fruits and vegetables, 1733 (83.8%) participants reported that they did not do so daily, and; the remaining 334 (16.2%) patients did not respond.

4.1 Presenting Symptoms

Of the cohort of patients who presented with chest pain, atypical and classical chest pain presentations were documented in 1.1% (n = 22) and 5.0% (n = 103) respectively. Other studies reveal prevalences of 39.5% and 60.4% for atypical and classical/typical chest pain, respectively (Tuyyab et al., 2017). Clinicians may not have assigned a specific diagnosis because they lacked sufficient clinical information or were reluctant to commit to a diagnosis without certainty. Undocumented cases may include many of these cases as well. Similar findings such as a lack of adequate information or simply did not wishing to commit to a diagnosis have been reported in several studies (Carlton et al., 2015; Sagristà-Sauleda & Barrabés, 2020; Swap & Nagurney, 2005).

A large proportion of patients presented with shortness of breath (n= 875, 42.3%) followed by nausea (n = 417, 20.2%) and palpitations (n = 364, 17.6%). Strangely certain symptoms are associated with sex and age. Sex was associated with palpitations (p = 0.011) and fatigue (p = 0.048). Similar findings have been reported were (Milner et al., 1999; O'Donnell et al., 2012). Age was associated with nausea (p < 0.001), fever (p = 0.002), sweating (p = 0.032), pleuritic pain (p = 0.026), cough (p = 0.015), and shortness of breath (p = 0.001). However, these associations have not been previously reported.

4.2 A&E Diagnosis/Dispatch

In our study, the prevalence of ACS was 3.7% (n=773)%, and that of STEMI, NSTEMI, and unstable angina was 0.8% (n =16), 0.9% (n = 18), and 2.1% (n = 43,) respectively, among patients presenting with chest pain in the ED which was much lower than that of other similar studies: 13% (n=26) (Fouda et al., 2023) and 49.7% (n= 566) (Asma et al., 2018). Muscular pain (n = 86; 4.2%) was the leading cause of chest pain, followed by GERD (n = 48; 2.3%). This finding contrasts a study by Khan et al. (2023), which reported higher prevalence of musculoskeletal and gastrointestinal chest pain as 22.9% and 15.7%, respectively. These low figures may have resulted from the large number (n = 1899, 91.8%) of patients who were undocumented. One patient presented with pulmonary embolism. This number is quite small when compared to other similar studies which reported life-threatening diagnoses such as APE (0.61%), aortic dissection (0.18%), and pericarditis/tamponade (1.23%) (Asma et al., 2018).

Dispatch information was unavailable for 1179 patients (57.0%) presenting to the A&E department with chest pain. In the absence of these records, it was assumed that the patients were discharged. Among individuals for whom data were recorded, 24.4% (n = 505) and 1.7% (n = 35) were dispatched to the medical ward and cardiac ward, respectively, and 11.3% (n = 234) were allowed to return home without further follow-up. Less than 1% were sent home with a follow-up review and instructions to attend the clinic. Leite et al. (2015) found that in a cohort of emergency department chest pain presentations, 81.1% of patients (n = 189) were discharged home, while 18.9% (n = 44) were admitted to the hospital for further management. Chanda et al. (2023) similarly found that 49.7% were warded and 40.2% were discharged from the ED.

4.3 Treatment/Timings

Emergency triage time (i.e., time between arrival and the initiation of triage) was completed in only 228 patients (11.0%). The patient's triage time ranged from almost immediately upon presentation at the A&E (i.e. time to triage = 0 h) to 24 h. This time contrasts with the expected standard of care (Byrne et al., 2023). Srivatsa et al. (2025) found that 43.4% of patients with acute chest pain met the <10 min ECG goal. Based on the European Society of Cardiology (ESC) guidelines, chest pain requires prompt and early assessment, focused medical history, physical examination, vital sign monitoring, ECG, blood investigations, and necessary medication (Byrne et al., 2023).

Our study revealed that 23.3% (n = 482) of patients received aspirin, 21.8% (n = 450) received clopidogrel, and 22% (n = 456) received heparin. These data strongly suggested that a substantial proportion of patients, approximately 23%, were managed as though they had acute coronary syndrome (i.e., STEMI, NSTEMI, or unstable angina), despite the absence of explicit documentation or formal documentation. These figures are lower than that found in other studies which revealed that aspirin use was 41.9% and heparin was 32.9% in patients with suspected ACS (Khursheed et al., 2015).

4.4 Documentation

Our study revealed lack of documentation regarding triage timing (n = 1840, 89%), medical diagnosis (n = 1899, 91.8%), and dispatch (n = 1179, 57%). This finding is similar to that of other studies that showed suboptimal data quality, with data completeness being only 57.3% in emergency medical records (Paichadze et al., 2015); incomplete documentation contributed significantly to missing or insufficient clinical information.

4.5 Design/Study Limitations

The limitations include the use of nonrandom sampling, lack of proper documentation, and failure to document provisional emergency diagnoses.

4.6 Conclusion and Recommendation

A major problem is documenting of diagnosis, treatment, and dispatch. The most commonly documented diagnoses were muscular pain and ACS, with antiplatelets being the most commonly prescribed drug. Proper guidelines, preferably in areas dedicated to chest pain, are mandatory to optimize patient care and prevent complications. Data collection templates and improved surveillance and data management techniques, including continuous training and quality control, are needed.

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God's Presence is Enshrouded with Electro-Magnetic Properties: A Psychophysical Study

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Abstract

The investigation deals with the elements called "spirits" in our solar system. Experiences and the accounts of trustworthy informants who were not intoxicated but sober were employed and analyzed. The scientific properties and the unique characteristics of the Spiritual beings who possess eyes and so can see, can talk and laugh, compel us to postulate that these entities/elements originated from the greatest stars in the meta-verse, THE SUN. These are inorganic bodies that can see and fly around in the solar system. They neither eat nor die, unlike the organic beings who developed from hydrogen, but rather they possess eternal characteristics. The spiritual beings originate from the sun, which also possesses Electricity and magnetism at the same time. It is more probable that what our forefathers encountered in our solar system and we also think of every day as God/gods, may be created BODIES/BEINGS who exist with us in solar systems of the meta-verse.

Keywords: Quantum Hypothesis, Electricity and Magnetism, Spiritual Bodies, Spirits, The Sun, Electromagnetic Properties

1. Preamble

How do you scientifically study the "presence" of the Almighty God? What unique characteristics do you associate with the "Spirit" that most people call Him in times of distress and tribulations? Could the scientific properties that we observe in the presence of God help us to scientifically *theorize* about his unique characteristics? Could our discoveries change our minds concerning how we perceive God? In this paper, we observe the unique characteristics that the presence of God depicts, and theorize that the **electromagnetic** properties are in consonance with the commencement of stars and their magnetic-electric properties. The sun may have something to do with the origin of these bodies or spiritual entities.

2. Method and Material

The psychophysical study used empirical evidence about well-known people's reports of experiences with God, who is considered an element of "Spirit". These experiences were reported by people who are considered trustworthy and straight and were not under the influence of wine or alcohol intoxication. In the Psychology of religion, the renowned interpretive method allows us to delve into people's experiences to discover how they perceive and also give meaning to their significant experiences/reality. Thus, medical doctors such as Pierre Janet, Jean Charcot, Sigmund Freud, and Carl Gustav Jung all considered the study of people's experiences and behaviors

a dynamic role in acquiring a dynamic understanding of their reality. The use of physical science methods to analyze data is not new; all renowned psychologists, physicists, psychoanalysts, neurologists, neuroscientists, etc., use these rigorous methods and concepts to reach their goal in understanding reality.

2. 1. The Spirit known as Obayifo (Wabayie)

This person has good luck because he was born with a Spiritual Power that makes him equal to "God" or "gods". In most cases, the power he has could be used to do wonderful things on earth and other parts of the planet, if he wishes to do that. He is unequal to God in the manner in which the latter creates or calls forth something new to emerge. This thinking is held by many able spiritualists who think that the witch has unlimited power except that he cannot create a human being or call forth one to exist. This shows that when spiritual powers are compared in this meta-verse, the witch reigns supreme, and this calls for a scientific investigation of its properties. We also know that the witch can use his power to destroy good things. But as for this, it comes from the accounts of human beings who are not perfect, nor are they scientists. How God sees a witch is something that nobody knows, since we have less knowledge of what God thinks of him.

2. 2. The Supreme Characteristics of a witch Obayifo (Wabayie)

When a person sleeps in the same bed with a witch, the witch needs to leave the body every night and wander around for purposes only known to them. A normal person without some powers is put into deep sleep before the **Spirit** leaves the body for the purposes for which we are not sure, except for those who are one with themselves. The same situation is experienced by this normal individual when the **Spirit** is about to return to enter the sleeping body at night.

Here comes the clue to the deep findings of this research paper. For the individual who has some spiritual power, which the witch Spirit finds it difficult to coerce to sleep deeply to enable him to exit for the night duty, the Spirit uses his power to MAGNETIZE him so that he can get his way out. In this experience, the individual will be awake so he can have an open view of what the spirit looks like and what its properties are. The process of magnetization is like a person receiving **an electric shock** that instantly kills, because few people survive electrocution as we know it. It brings out the secret that a witch has [**that nobody knew before until now**] that he could easily electrocute a person and kill him. We know of several experiences where people have been burned and suffered pain all over their bodies and died because they had encountered a witch who thought that the victim was spying on him or trying to test his power. In this electrocution, only the powerful spiritual individuals can survive.

The continuous survival of electrocution without death will make the witch come to a compromise with the powerful spiritual individual. Then the witch will show him how to avoid those dangerous experiences. He will reveal to himself that he is a witch and, therefore, he should put some things that the witch will direct him to put somewhere in the room or near the window to avoid such painful experiences, which could kill him. Marriages or relationships could end if the witch finds that the other person is so powerful that he cannot withstand it, and is blocking his way to exit every night to do his free things that are required, or meetings with his peers.

2. 3. A Powerful Spiritual Individual Experiences

To the surprise of the powerful individual, the witch power is not something one will desire if people were aware of it and what it comprises. That which leaves the bodies and returns after 3 to 4 hours each night (around 02.00 to 05.00) is like **an animal with black color**. The size may be like a rat or its equivalent. It does not walk but flies, yet has no wings. It has **a strong odor** and is felt strongly when it is closer to the body. The witch, though asleep in body when this is going on, will then come to a new phase. One will suddenly hear conversations throughout the nighttime when it is gone. It is not easy to make up what is being discussed, and sometimes it is mixed with laughter. It is like the conversations that take place on the wireless set or radio. As soon as it [Spirit] returns to the sleeping body, this conversation stops. Then you could either wake her up easily or touch her, and she will open his eyes. The witch can play with you if you challenge his power. She can wheel you around in your sleep, or she

can sit on you like a horse or any animal. That is one of the reasons why a person should never misbehave or challenge it if they are not spiritually powerful. Leave it alone, and it will also leave you alone.

Let us move on and begin with some narrations which the Ancients associated with the presence of God or the entity called "Spirits".

3.1. Moses and the Presence of God

Moses had run away from Ancient Egypt to marry Jethro's daughter, Zipporah. Because he had murdered an Egyptian who was maltreating his fellow Israelite. He thought he had done a bad thing in secret, so nobody knew of it. But when it came out, he was afraid that they would harm him or put him in prison. This was considered treason. It was here that God appeared to him and asked him to return to the people of Israel to negotiate for their removal from Bondage to worship Him in the desert. The message had come to the people of Israel with promises of becoming a great nation in the future and to live and inherit the land filled with milk and honey.

God appeared in a **flame, but the bushes remained intact** without being burned. He was asked to remove his shoes because the place where he was standing was a holy ground, as God had manifested his presence.

3.2. Abraham and the Presence of God

This happened when Abraham decided to make an offering to God, and the usual practice among the ancients was that God would descend and eat the offerings he had provided on the Altar. So he had time to drive away the birds that wanted to interfere with his sacrifice. Abraham had waited for hours to have God consume his sacrifice, but he waited for many hours without God coming to present himself. At last, when God came, he revealed himself in **a flame of fire** and passed before Abraham. Abraham was satisfied that God had come as he promised.

3.3. Moses begged for the Presence of God

God had walked and communicated with his servant Moses, and he had helped Moses to set the Israelites free from bondage in Ancient Egypt from oppression and slavery. Even though Moses had witnessed God's power during these manifestations to bring them from the Land of suffering and oppression, he still doubted God's power and presence. **So he begged God to allow him to see his face.** God listened to Moses and said that he would allow him to see the back of his head, "for no man shall see his face and live". So God put Moses in a cleft and allowed him to see the back of his head when he passed by. Moses' face shone so powerfully when he returned to his people in the camp. He was glad and became the favorite messenger because he was the only one God could talk to him "face to face".

3.4. The Powerful Spiritual Encounter by Christer in Uppsala, Sweden

He appeared to me in a dream three days before that he would come to pass by, but I should not dare to come closer to his presence. By that time, I had not slept with a woman for 10 years. Secondly, I had bought a nice bed, which I had not allowed any woman to sleep on.

When the three days had elapsed, I waited for God the whole night without sleeping. I became tired and was so exhausted that I nearly gave up waiting until it was about 05.00 am. First, I heard a big noise like a Jet Airplane on the steps to my room. I did not think that it was anything strange since in Uppsala there was a Military Airport, where sometimes planes take off in the morning for reconnaissance. The biggest airport in Sweden, Arlanda, which lies about 60 kilometers away, usually has planes flying over Uppsala county, and sometimes you can hear the take-offs. Suddenly, the noise stopped, and I saw something enter, which immediately reminded me of the much-awaited visitation of God. Then, not thinking too much about it, I decided to jump in front of Him, and the idea was to die. There was a strong preference on my part to die by casting myself in front of him. Suddenly, I was **MAGNETIZED** [Magnetism and Electricity] and could not move any part of my body on the bed, even though I lay awake. So I lay in my bed with my face looking toward the figure. I could see the power passed by, but this time he opened the balcony door as he entered the 100-mile forest behind my house in Uppsala, Sweden. The trees were blowing toward each other during the winter months in strong winds.

The initial idea was to call the journalists and radio reporters to account for my experience. But I was very much afraid that they would brand me a sick person or mentally disordered individual. This would make it difficult to get employment. The only thing I did was to report the experience to the Manager of the Uppsala Kommun Estate. I explained all the experiences for four days, during which I have not been able to close the balcony door that was opened by God.

3.5. *The Ark of the Covenant*

The Israelites were returning from one of their numerous wars waged in the Promised Land. They had surmounted their enemies, so they were exhilarated and had joy beyond measure. They danced and sang as they marched along in the streets. Suddenly, the Ark of the Covenant, which was placed on a horse or donkey, experienced agitation and nearly fell down. But they have been warned not to touch this holy black box unless the person is a Levite. The attempt by a commoner to salvage led to his **instant electrocution** by God/Spirit. It is mentioned every day by Christians concerning how God's words and commandments should not be disobeyed.

4. Results

4.1. *The Scientific Electro-magnetic Properties of the Spirit called "God".*

The results of this investigation show us that the scientific properties/elements, which spirits use *to hurt others, to protect themselves, to enshroud their presence*, are the following: Fire, a Star, Magnetic, Electricity, and the Sun. These elements are currently being studied and used in the human world to champion knowledge that has led to revolutions. Their power is magnificent, especially with the discovery of lasers and other sundry properties, which have led to many inventions in the scientific world. Planck (1920) was the first to come out with his quantum hypothesis, which also enhanced the study by Einstein (2024) to discover the photoelectric effect. Through a series of research projects, the invention of laser came about that has led to significant breakthroughs in the physical sciences (Bohm, 1951: 22ff.). These would not have been possible without the preliminary work and invention of electricity and magnetism by Maxwell (1873: 10ff.) and his English associates such as Michael Faraday and the Cambridge physical scientist, Isaac Newton (Newton, 1687: 1-581; Newton, 1704:1-320; Newton, 1687: 1-581).

5. Discussion

5.1. *Evolutionary Scientific Perspective*

Scientists should be informed about a witch or any spiritual entity that is known to be closer to the God/gods, or they appear as God themselves, to have a strong tendency to utilize **MAGNETIC POWER AND/OR ELECTRICITY** [Electromagnetic waves] to protect themselves, hurt other threatening bodies, and enshroud their presence. In the case of a witch, Spirits can burn like a star in the night, and fly around in different circles, and could fly in a vertical manner, very high like modern rockets. Spirits can burn a human being who challenges him or her, so every Spirit has an element of fire, as we have exemplified in the case of the meetings with Abraham and Moses by Almighty God. Spirits, in fact, are like STARS that glitter; and in the case of the witch spirit, it can see so it could dim as well as magnify to conceal its presence in the night. Spirits' greatest powers are their ability to **electrocute and kill instantly**, which was displayed with the killing of the individual who thought he was protecting the **ARK OF COVENANT**, which nearly fell, and he attempted to save it. A witch could display this power when a powerful spiritual person who sleeps beside him refuses to sleep to make way for his exit in the deep night, 02.00 to 05.00 A.M.

POSTULATE: I Postulate That The SUN Might Have Something To Do With The Origin of These Spiritual Bodies.

6. Concluding Remarks

The scientific properties and the unique characteristics of the Spiritual beings who possess eyes and so can see, can talk and laugh, compel us to postulate that these entities/elements originated from the greatest stars in the meta-verse, **THE SUN**, as inorganic bodies that can see and fly around. Opposite to organic beings, they neither eat nor die, but possess eternal characteristics. There can be no other source where the spiritual beings come from except the sun, which also possesses **MAGNETISM AND ELECTRICITY** [Electromagnetic properties] at the same time. It is more probable that what our forefathers encountered and we also think of every day as God/gods may be created BODIES/BEINGS or Spiritual Beings who exist with us in the meta-verse.

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