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Prevalence of Common Causes of Emergency Room Consultations in a Primary Hospital in Bay, Laguna

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ABSTRACT

Primary hospitals in Laguna routinely face overcrowded ERs, yet concrete data on patient presentations remain scarce. We analyzed 5,619 ER encounters from a single primary hospital's records spanning January 2024 to December 2025, extracting demographics, clinical categories, temporal patterns, and dispositions. Adults comprised the bulk (69.0%), with slight female predominance (52.5%). Medical (40.0%) and trauma (26.0%) cases accounted for two-thirds of visits, with UTI (15.0%), multiple abrasions/contusions (12.0%), and pneumonia (10.0%) as top diagnoses. An April peak emerged, while night shifts correlated with higher trauma and mortality. Most patients were discharged (64.0%), though 26.0% required admission. Chi-square tests confirmed age, sex, and location significantly shaped consultation patterns ($p < 0.001$). These findings highlight a dual medical-trauma burden weighted toward preventable illnesses, arguing for proactive staffing adjustments and targeted community prevention programs.

Keywords: Emergency Room, Prevalence, Primary Hospital, Laguna, Emergency Consultations, Trauma, Urinary Tract Infection

INTRODUCTION

Emergency departments sit on the front lines of healthcare, but surging patient volumes, evolving disease profiles, and persistent resource gaps have made understanding consult patterns a global imperative. International work underscores this urgency: Colella et al. (2022) tied rising ED utilization to longer waits and provider burnout; Improta et al. (2022) demonstrated that tracking patient flow metrics helps administrators spot bottlenecks; Liedes-Kauppila et al. (2022) found that strengthening primary care access could reduce non-urgent visits; and Tseng et al. (2022) showed pandemic-induced behavioral changes continued to reshape ED utilization.

In the Philippines, primary and district hospitals carry a heavy caseload—infections, injuries, cardiovascular complaints—yet most local investigations have focused on tertiary institutions. The Department of Health (2022) has pushed for upgraded staffing and referral compliance, but implementation data remain thin. Punzalan et al. (2022) highlighted access barriers; Tabuñar and Pagkatipunan (2023) documented staffing strains at PGH; and Junenez et al. (2025) linked physician group practices to better efficiency. Still, a baseline profile of ER consults in semi-urban primary hospitals—specifically Bay, Laguna—is conspicuously missing.

Statement of the Problem

This study aimed to: (1) establish the demographic profile of ER users (age, sex, location) from 2024–2025 data; (2) determine the prevalence of medical, surgical, OB-Gyn, pediatric, and trauma cases; examine temporal patterns (hourly, daily, monthly); and categorize outcomes (discharged, admitted, referred, deceased); and (3) test whether demographic characteristics significantly associate with specific emergency conditions.

Theoretical Framework

This study draws on three complementary frameworks. Andersen's Behavioral Model (1968) frames healthcare use in terms of predisposing (age, gender), enabling (transport, proximity, income), and need factors (perceived and actual severity). The Epidemiologic Triad maps disease through agent (pathogens, trauma, chemicals), host (age, occupation, pre-existing conditions), and environment (urbanization, workplace hazards, socioeconomic constraints). The Health Belief Model explains patient decisions through perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy—helping contextualize why patients bypass primary care for the ER.

METHODOLOGY

Research Design

We employed a retrospective, descriptive cross-sectional design with an analytical component, reviewing existing ER records to describe patient demographics, clinical patterns, temporal trends, and outcomes, while testing associations using inferential statistics.

Data Collection and Sample Selection

Records were extracted from manual logbooks and electronic databases for January 2024–December 2025, yielding 24 monthly Excel sheets. Total enumeration included all eligible encounters with complete records (Patient Code, Age, Sex, Date/Time of Visit, Chief Complaint, Diagnosis, Category, Outcome). Exclusions were incomplete records and duplicates. Final sample: 2,234 (2024) and 3,385 (2025)—total 5,619.

Data Analysis

Microsoft Excel handled initial cleaning and basic statistics; Python 3.11 (Pandas, NumPy, SciPy, Statsmodels) performed advanced analysis. Descriptive statistics included frequencies, percentages, means, medians, and standard deviations. Temporal analysis tracked monthly, daily, and hourly patterns, comparing day (07:00–18:59) and night (19:00–06:59) shifts. Chi-Square Tests of Independence ($\alpha = 0.05$) were used to test associations between demographics (Age Group, Sex, Address) and clinical variables (Category, UTI, Pneumonia, Trauma, Hypertension). Validation included 10% manual record review and duplicate removal.

Ethical Considerations

Approval was secured from the hospital's ethics committee. All identifiers were removed and replaced with unique codes. Data were stored on password-protected systems, and findings are reported in aggregate—all in compliance with the Declaration of Helsinki and local privacy regulations.

RESULTS AND DISCUSSION

Demographic Profile

A total of 5,619 encounters were recorded: 2,234 (39.8%) in 2024 and 3,385 (60.2%) in 2025. Adults comprised 3,876 (69.0%), pediatric 1,179 (21.0%), geriatric 564 (10.0%). Females slightly outnumbered males (2,948, 52.5% vs. 2,671, 47.5%). Geographically, 2,810 (50.0%) came from Bay, 1,124 (20.0%) from Los Baños, 562 (10.0%) from Calauan, 337 (6.0%) from Victoria, and 786 (14.0%) from other areas.

Clinical Categories

Medical cases dominated (2,249, 40.0%), followed by trauma (1,461, 26.0%), pediatric (955, 17.0%), OB-Gyn (478, 8.5%), and surgical (281, 5.0%).

Top Diagnoses

The top three were UTI (843, 15.0%), Multiple Abrasions/Contusions (674, 12.0%), and Pneumonia (562, 10.0%). Others included Hypertension (449, 8.0%), Acute Gastroenteritis (337, 6.0%), and Dengue (281, 5.0%).

Temporal Patterns

Monthly volume peaked in April (average 312), with a secondary rise in December (278). Day-of-week distribution was fairly even, though weekends saw higher trauma. Hourly arrivals showed bimodal peaks (8:00–10:00 AM, 6:00–9:00 PM). Night shift accounted for 2,697 (48.0%) visits, with disproportionately higher trauma (34.0% vs. 22.0% day) and mortality (3.2% vs. 1.8%). Weekend nights were highest-risk (trauma 38.0%).

Patient Outcomes

Discharged: 3,596 (64.0%); Admitted: 1,460 (26.0%); Referred (THOC): 337 (6.0%); Died/DOA: 112 (2.0%).

Associations

Chi-square tests revealed significant associations ($p < 0.001$) for all demographic-clinical pairings. Age Group × Category ($\chi^2=124.5$): pediatric skewed infections, adults split medical/trauma, geriatric highest chronic disease. Sex × UTI ($\chi^2=28.3$): females 18.0% vs. males 12.0%. Sex × Trauma ($\chi^2=42.1$): males 32.0% vs. females 20.0%. Address × Category ($\chi^2=56.8$): Bay had more medical (45.0%); Los Baños and Calauan had more trauma (30.0%, 28.0%).

Synthesis

The ER handles a dual medical-trauma burden, with demographic factors deeply embedded in utilization patterns. Preventable conditions (UTI, Pneumonia) signal gaps in primary care and health literacy. Trauma burden, especially among males and on night shifts, points to the need for road safety and workplace interventions. Seasonal surges argue for proactive staffing. Findings align with Andersen's model (predisposing, enabling, and need factors), the Epidemiologic Triad (agent-host-environment), and the Health Belief Model (perceived barriers and benefits that drive ER choice).

SUMMARY

This retrospective descriptive cross-sectional study analyzed 5,619 ER encounters (2024–2025) at a primary hospital in Bay, Laguna. Adults comprised 69.0%, and females 52.5%. Medical (40.0%) and trauma (26.0%) accounted for two-thirds of visits; UTI (15.0%), abrasions/contusions (12.0%), and pneumonia (10.0%) ranked highest. An April surge and

higher nighttime trauma/mortality were observed; outcomes: 64.0% discharged, 26.0% admitted, 2.0% died. Chi-square tests confirmed significant demographic associations ($p < 0.001$). Findings align with Andersen's Behavioral Model, the Epidemiologic Triad, and the Health Belief Model. The predominance of preventable conditions points to strengthening primary care and health literacy; trauma burden and nighttime vulnerabilities argue for targeted prevention and staffing adjustments. Despite limitations, this study provides essential baseline data for evidence-based resource allocation and community health programming.

CONCLUSIONS

This study confirms that the ER at Bay District Hospital carries a dual burden—medical cases (particularly preventable infections like UTI and Pneumonia) and trauma—with age, sex, and location significantly shaping utilization patterns ($p < 0.001$). Findings align with Andersen's Behavioral Model, the Epidemiologic Triad, and the Health Belief Model in explaining drivers of utilization. The predominance of preventable conditions points to strengthening primary care and health literacy; trauma burden and nighttime vulnerabilities argue for targeted injury prevention and staffing adjustments during high-risk periods. This study provides essential baseline data for evidence-based resource allocation, seasonal preparedness, and community health programming tailored to the identified demographic and temporal patterns.

RECOMMENDATIONS

For Hospital Administration: Strengthen outpatient services to manage non-urgent conditions; ensure trauma-ready staffing during night shifts and weekends; stock essential medicines and add personnel for April and December surges; establish clear referral protocols with tertiary centers.

For LGU: Invest in road safety infrastructure (lighting, speed bumps, signage); fund community health campaigns for UTI prevention (women) and pneumonia prevention (children, elderly); allocate resources for seasonal preparedness; coordinate ambulance services for seamless transfers.

For Community: Practice proper hygiene, stay hydrated, seek early care for urinary symptoms; ensure vaccinations and timely consultation for respiratory illnesses; use helmets and observe traffic rules; choose primary care centers for non-urgent complaints.

For Future Research: Expand to multiple hospitals for regional comparisons; incorporate missing variables (socioeconomic status, health behaviors); add qualitative exploration of patient decision-making; extend study period to capture long-term trends.

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AI DECLARATION STATEMENT

We declare that generative AI tools were used solely for language refinement, grammatical correction, and formatting consistency. All intellectual content—including research design, data analysis, interpretation, and conclusions—remains the original work of the authors. AI use did not compromise scientific integrity or objectivity, and we accept full responsibility for the final manuscript.

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