

Cost of Hypoglycemia Among Hospitalized Patients with Diabetes Mellitus

EE415

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Introduction

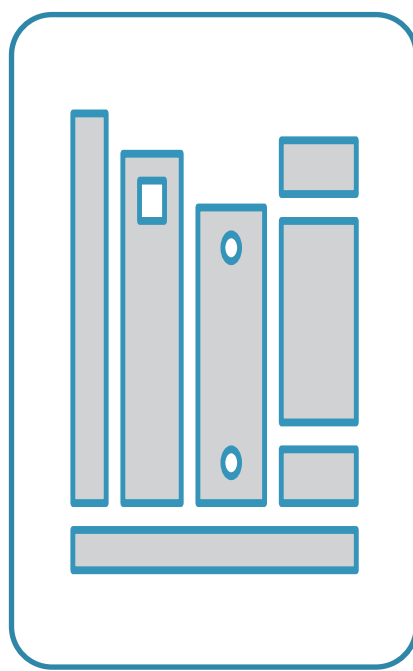
Diabetes affects around 537 million individuals globally, with a significant proportion residing in low- and middle-income nations. According to the most recent available statistics in 2021, the Kingdom of Saudi Arabia has a population of approximately 4.2 million individuals who have been diagnosed with diabetes mellitus with an estimated cost of \$7.4 million [1].

Expenditures related to diabetes encompass both direct and indirect medical costs, comprising hospital inpatient care, visits to the emergency department, diagnostic tests, and prescription drugs. Additionally, the economic impact includes the loss of productivity resulting from both morbidity and mortality [2].

Objective

To assess the length of stay and cost per hypoglycemia episode, as well as to determine the factors that influence the length of stay, intensive care unit (ICU) admission, and hospitalization costs among patients with diabetes mellitus.

Methods



This is a retrospective cross-sectional study conducted on a cohort of diabetic individuals who experienced confirmed hypoglycemia episodes.



The data pertaining to these patients were obtained from their respective hospital medical records, covering the period from January 2021 to December 2022. King Fahd Medical City was selected as the site of data collection for this study.

Results

- A total of 396 patients were involved in this study. The median duration of stay for the patients was 7.0 (2.0-16.0) days.
- Only 3.0% of the patients had a previous hypoglycemia admission history.
- Around 53.3% of the patients were admitted to the ICU. The median duration of ICU admission stay was 1.0 (0.0-1.0) days.

- The highest cost driver for patients with hypoglycemia was ICU stay with a median cost of 9000.0 (1125.0-15750.0) Saudi Arabia riyal (SAR).
- The total median cost associated with hypoglycemia hospitalization was 4696.0 (886.5-12789.5) SAR.
- Ex-smokers were more likely to have higher hospitalization costs for hypoglycemia (4.4-folds) (p-value= <0.001).
- Being admitted to the ICU increased the likelihood of having a longer length of hospitalization by 2.6-folds (p-value= <0.001).
- Patients with longer diabetes duration (above 9 years) were more likely to be admitted to the ICU by 2.9-folds (p-value=0.008).

Table 1: Patients' hypoglycemia profile

Variable\$	Frequency	Percentage
Median glucose level on admission (mg/dL)	66.5 (47.0-94.5)	
Median duration of stay (days)	7.0 (2.0-16.0)	
Previously admitted for hypoglycemia (Yes)	12	3.0%
Admitted to ICU (Yes)	211	53.3%
Median duration of ICU admission stay (days)	1.0 (0.0-1.0)	

SD: Standard deviation; \$ Data were presented as either frequency and percentages or mean and standard deviation (±SD).

Table 2: Costs of admissions due to hypoglycemia

Type of cost	Median cost (interquartile range)
Emergency department visit cost	300.0 (0-300.0) SAR
Physicians consultation cost	0 (0-750.0) SAR
Inpatient admission stay cost	1,267.0 (38.6-9,315.0) SAR
Lab test cost	1,057.0 (255.8-2,353.0) SAR
Radiological examination cost	0 (0-7,266.0) SAR
ICU stay cost	9,000.0 (1,125.0-15,750.0) SAR
Total cost	4,696.0 (886.5-12,789.5) SAR

Conclusions

- Smoking history and disease duration may also affect hypoglycaemia-related hospitalizations.
- Understanding the factors that affect diabetic patients' hypoglycemia hospitalization cost and length is essential for improving diabetes care and resource usage.
- Identifying high-risk patients and implementing efficient preventative strategies can lower the economic burden of DM and accompanying hypoglycaemic episodes and enhance DM management.

References

1. International Diabetes Federation. Saudi Arabia: Diabetes report 2000 — 2045. 2023 September 16, 2023]; Available from: <https://diabetesatlas.org/data/en/country/174/sa.html>.

2. Ng, C.S., Lee, J. Y., Toh, M. P., & Ko, Y., Cost-of-illness studies of diabetes mellitus: a systematic review. Diabetes research and clinical practice, 2014. 105(2): p. 151-63.

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