



How economic analysis increase awareness on clinical services, a case of diabetes mellitus at a teaching hospital, Myanmar

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Background

- Type 2 diabetes is a growing public health concern in Myanmar.
- Underdiagnoses, delayed diagnosis, and under treatment in diabetes care all increase the risk of hospitalizations, harmful complications, and mortality among diabetes patients.

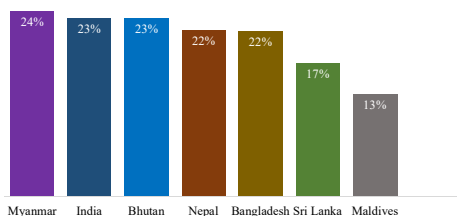


Fig 1: Probability of mortality from diabetes and NCD in South East Asia

Objectives

- To explore the direct medical cost (DMC) of type 2 diabetes inpatient care as well as the impact of complications and comorbidities on the DMC.

Method

Study site and study population

- Study site: North Okkalapa General and Teaching Hospital in Yangon, Myanmar according to the convenience of data availability.
- Study participants: all patients admitted with type 2 diabetes and/or its complications for the year 2017-2018.

Design

- Incidence-based cost of illness analysis

Data collection

- Medical records of every study participants for the study period were retrospectively reviewed.
- Participants with incomplete medical records, who absconded treatment and who transferred to the other hospital were excluded.

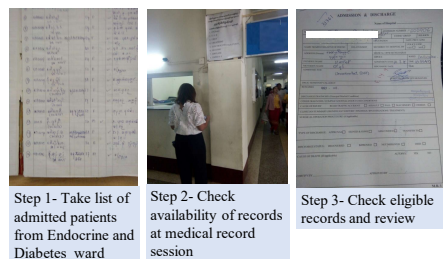


Fig 2: Process of data collection

Cost calculation

- First, unit costs of medical services provided by the hospital were calculated by using the standard costing approach.
- Then direct medical cost (DMC) was calculated
 - DMC included costs of medications, investigations, specialist services, emergency services, operation, blood bank service, and hotel stay.
 - Cost of each service was computed by multiplying quantity of services used with their unit costs
 - Total cost was calculated by summing up of costs of all kinds of services

Data analysis

- One-way sensitivity analysis was applied for parameter uncertainty.
- Multiple regression analysis was applied to formulate cost model

Result

Patient characteristics	Statistical value
Mean age; year (SD)	56.51 (10.9)
Age group	
40 to 50 (year)	31 (36%)
51 to 60 (year)	25 (29%)
61 to 70 (year)	22 (25%)
71 to 80 (year)	6 (7%)
81 and above (year)	3 (3%)
Gender: female	56 (64%)
Length of stay (day)	
Range	78
Mean (SD)	16.05 (12.58)
Median	12
Patient with complications	57 (65%)
Patient with comorbidity	65 (74%)

Table 1: General characteristics of participants

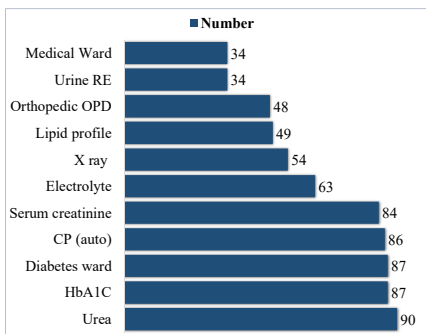


Fig 3: Most commonly used medical services by hospitalized type 2 diabetes patients

Cost component	Sum	Sd	Median
Drug cost	7,111.63	106.05	32.30
Investigation cost	2,562.97	33.43	21.00
Blood bank service	52.85	1.83	-
Emergency service	33.11	1.74	-
Hotel cost	45,282.29	400.55	380.83
Operation service]	296.15	12.71	-
Specialist OPD service	605.63	19.79	0.89
Total IPD cost	55,944.63	505.84	480.37

Table 2: Treatment cost of hospitalization of type 2 diabetes patients

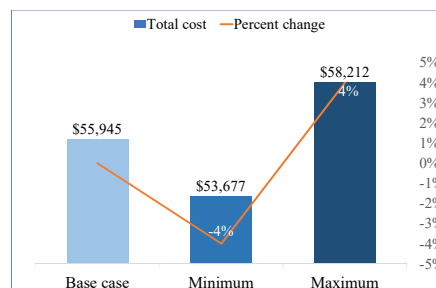


Fig 4: Uncertainty due to input parameter (changes in drug prices)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.782	.078		74.364	.000
Foot ulcer	.521	.123	.372	4.253	.000
Nephropathy	.565	.121	.416	4.656	.000
Respiratory tract disease	.767	.167	.413	4.596	.000
Retinopathy	.583	.220	.229	2.642	.010

Table 3: Forecasting cost model of treatment cost

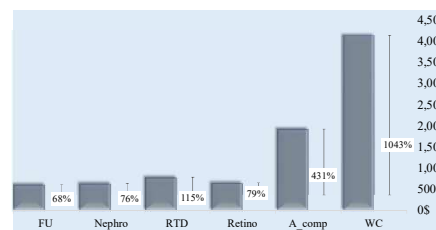


Fig 5: Cost saving per patient per admission

Conclusions

- Treatment cost for hospitalized type 2 diabetes patients is very high, mainly due to preventable complications and comorbidities.
- Effective clinical services should be initiated to delay health consequences in patients with type 2 diabetes

Limitations

- As the complications were detected from preexisting medical records of study participants, it is possible that the study failed to capture all types of complications due to lack of laboratory confirmation.
- Due to small number of patients in some complications and comorbidity subgroups, cost estimates for some complications and comorbidities were not included in the model.

References

- World Health Organization. World health statistics 2016: monitoring health for the SDGs sustainable development goals: World Health Organization; 2016.
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