THE ECONOMIC BURDEN OF THYROID EYE DISEASE IN THE KINGDOM OF SAUDI ARABIA

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Background

- Thyroid eye disease (TED) is a progressive autoimmune disease that causes significant remodeling of the soft tissues surrounding the orbit and results in progressive inflammation and increase in retrobulbar fat and muscle tissue[1,2].

- Common manifestations of TED can vary based on the activity and the severity of the disease, ranging from short-term signs of inflammation to more significant long-term inflammatory damage[3-5].

- TED severely impacts the quality of life (QoL) of patients and their caregivers due to appearance and vision impairment, which may lead to significant disability, unemployment, social impact and isolation, with major mental health distress[6].

- The estimated prevalence of TED is reported to be 18.9 per 100,000 people[7].

- In the Kingdom of Saudi Arabia (KSA), there is a scarcity of data regarding the epidemiology and economic impact of TED.

Objective

To assess the economic burden of TED in KSA through the evaluation of direct and indirect costs in different disease severity and activity states from societal and public payers perspectives.

Methods

- A cost of illness study was conducted to estimate the economic burden of TED from public healthcare payer and societal perspectives in KSA.

Data Sources :

- The data were sourced from local experts across six tertiary hospitals in KSA, medical business centers, and national drugs tender lists.

- The data were collected from clinicians, clinical pharmacists, and health economists through the use of standardized medical and economic questionnaires.

- The included data were estimated prevalence, medical resources utilization, unit costs of services, productivity loss and absenteeism

Cost Calculation and Model:

- Costing was performed through a bottom-up and prevalence-based approach over 5 years' time horizon.

- Direct medical costs quantified resource utilization of clinic visits, medications, diagnostic tests, and surgical interventions, whereas indirect costs estimated absenteeism and loss of productivity.

Methods Cont'd

**Figure 1. Research design for cost estimation model**
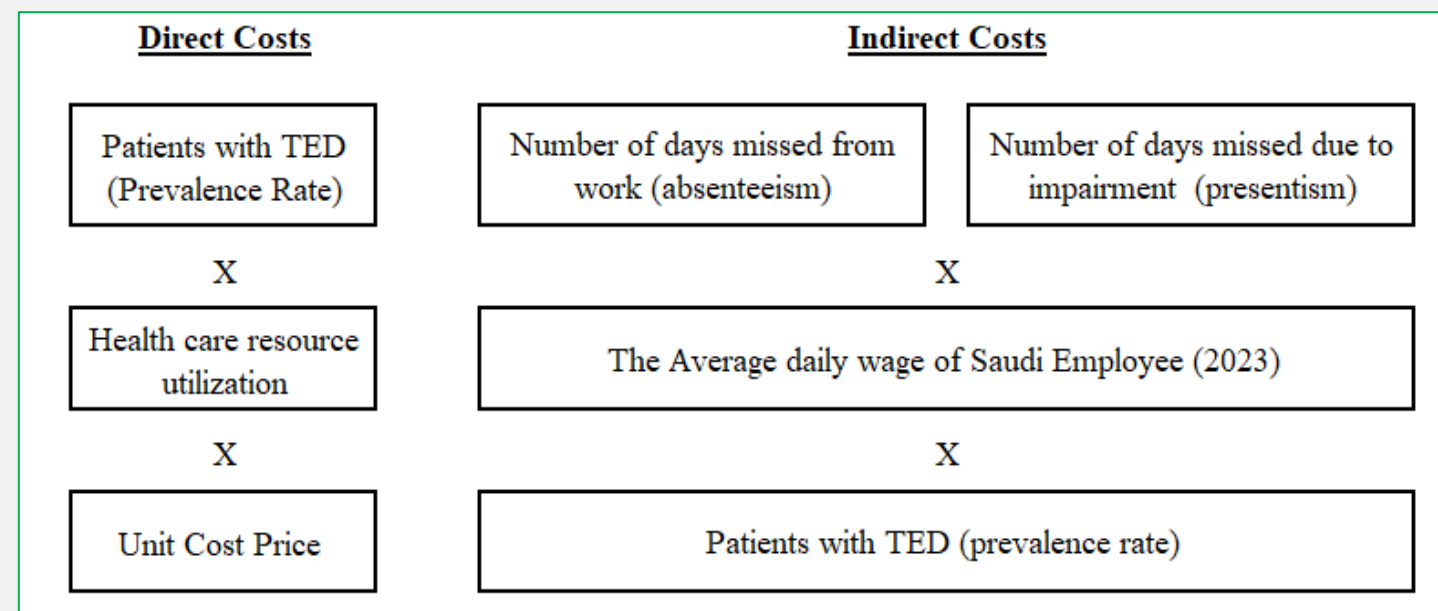
- The TED population was divided into four disease states based on disease activity and severity.
- The per patient total cost, including direct and indirect cost, was calculated for each disease state.
- To assess the robustness of the results, one-way sensitivity analyses were conducted in which input parameter values were varied by ±10%.

Results

- The prevalence of TED was estimated to be 6,881 patients in KSA, distributed amongst the different disease states. 9% of the population were in the moderate to severe TED category.
- The average annual cost per patient differed based on disease activity and severity. The average annual costs per patient with mild disease states were the lowest at SAR 53,276 ($14,207) and SAR 45,954 ($12,254) for active and inactive disease states, respectively. Whereas the cost for active and inactive moderate to severe states were SAR 120,467 ($32,124) and SAR 88,342 ($23,558).
- Figures 2 through 5 present the cost breakdown of the different disease states. Indirect costs accounted for 49.27% - 67.19% of the overall cost with moderate-severe disease.
- Over 5 years, the average estimated per patient costs were SAR 353,994 ($94,398) and SAR 473,836 ($126,356) for patients transitioning between different disease states.
- By extrapolating costs based on prevalence rate of moderate to severe cases, the overall projected costs were between SAR 97.4 million ($26 million) and SAR 130.4 million ($35 million) over 5 years.

Figure 2. Total cost breakdown per patient for active mild disease
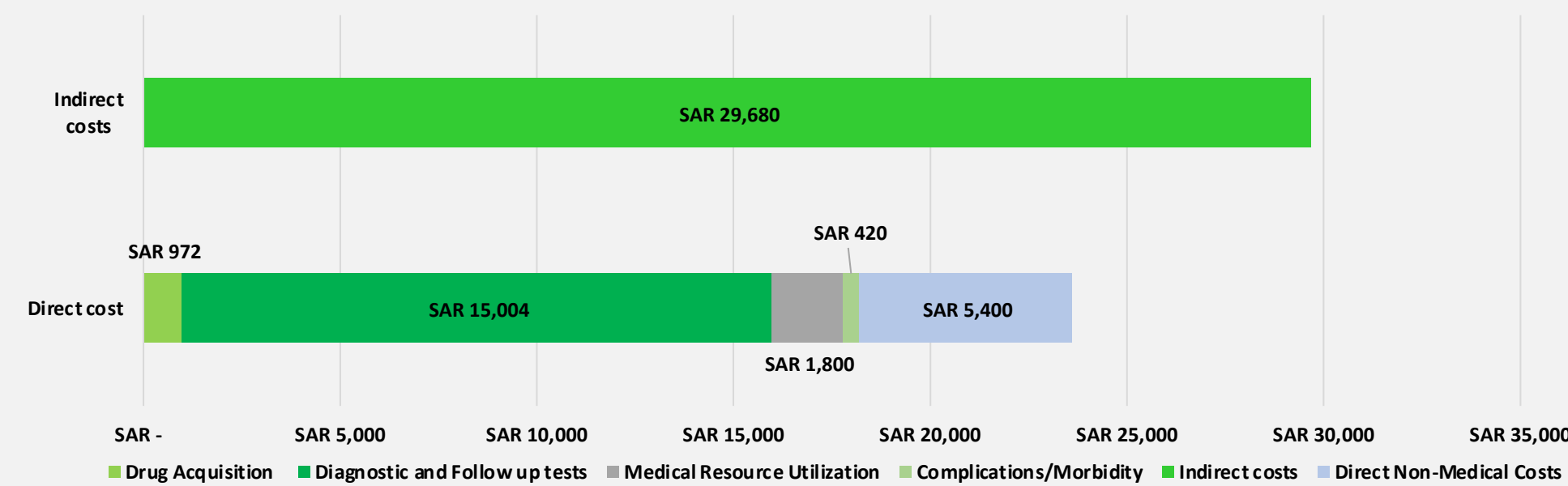
Results

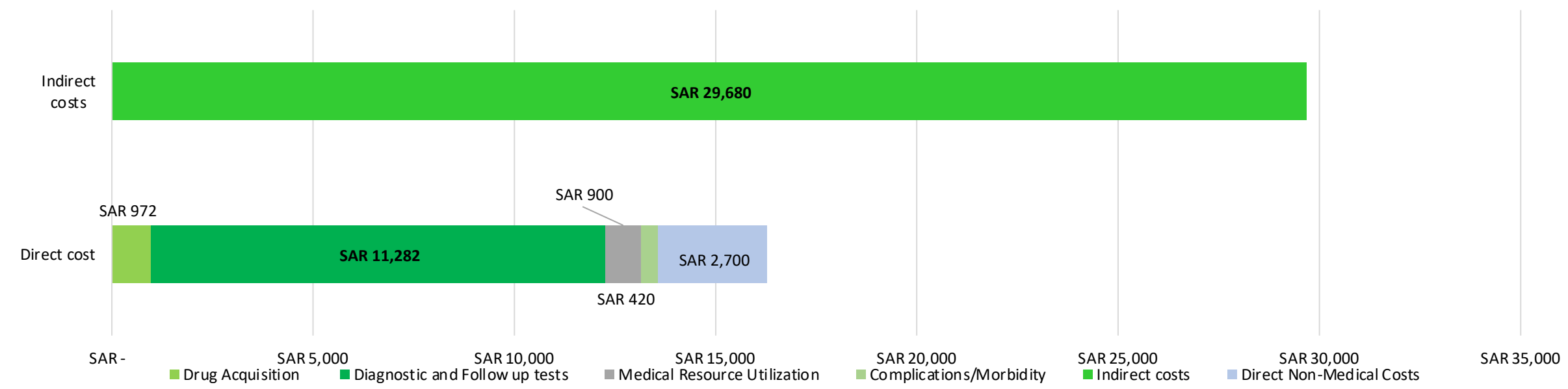**Figure 3. Total cost breakdown per patient for inactive mild disease**

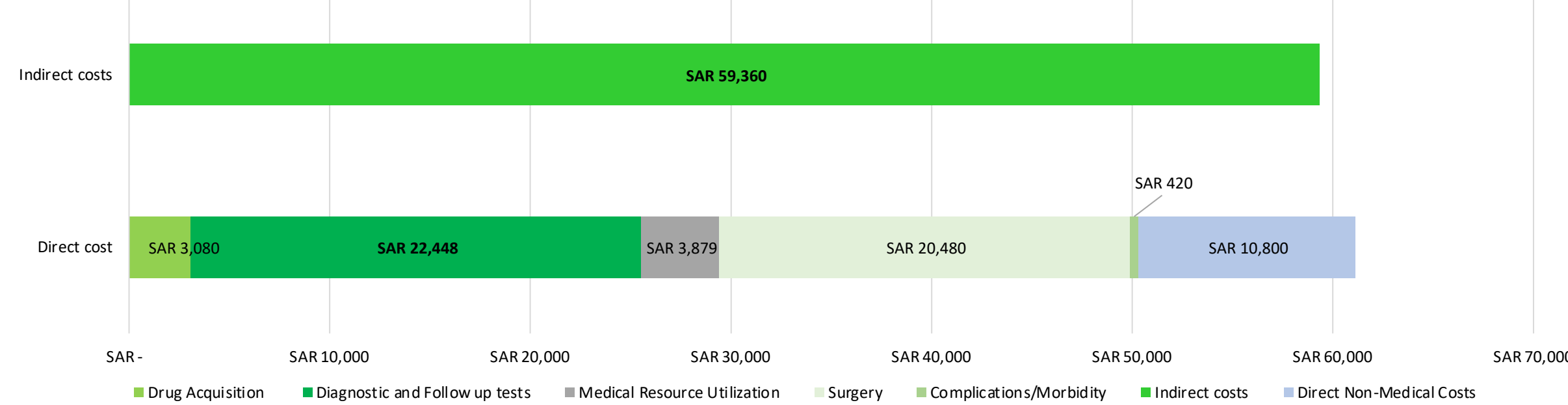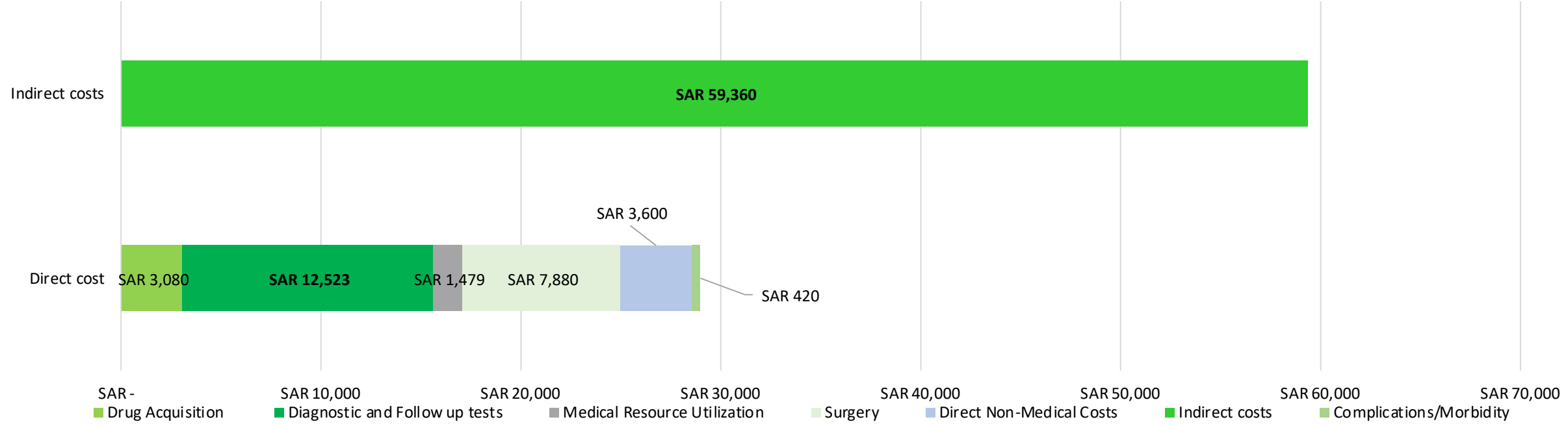**Figure 4. Total cost breakdown per patient for active moderate to severe disease**

Figure 5. Total cost breakdown per patient for inactive moderate to severe disease

Conclusion

- Due to its debilitating nature, TED imposes significant economic and clinical burdens on the patients and healthcare system in KSA.
- The total direct and indirect cos per-patient as well as overall cost correlated positively with the severity of TED and level of disability, and it was three-fold higher in moderate to severe TEDs compared to mild TEDs in both active and inactive states.
- These results illustrate the debilitating nature of this disease and emphasize the importance of improved strategies for the management of TED.

References

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