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COST-MINIMIZATION AND EPIDEMIOLOGICAL STUDY OF HOME HEALTH CARE SERVICES IN ASEER REGION, SAUDI ARABIA: A RETROSPECTIVE COHORT STUDY

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ABSTRACT

Background: Home health care (HHC) services were in line with Saudi Arabia Vision 2030 and the Health Sector Transformation Program and were introduced to serve patients with complex chronic multimorbidity outside of hospital settings. However, the cost efficacy and epi-benefit should be evaluated in a broad HHC population.

Methods: This Retrospective Cohort Study was developed in line with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) protocol and included 677 HHC patients in the Aseer region up to 2025. HHC-related HHC features were as follows from the EMRs: demographics, ICD-10 based clinical codes, results of the Braden Scale and mobility functional assessments, use of devices, and service utilization. The cost was calculated using the Ministry of Health Service Coding Manual (IOS) and the SFDA pharmaceutical price list. The assumed equality in clinical outcomes was implicit in the cost-minimization study comparing monthly HHC costs with modelled inpatient extended-care costs. One-way sensitivity analyses were performed relative to the key costs.

Results: The mean age of the 126 patients was 53.8 years, 65.3% were female, and 69.9% resided in urban areas. Multimorbidity was common, with 69.1% having hypertension, 52.9% diabetes, and 21.9% a prior stroke. Polypharmacy was reported in > 80% of patients, and 85% were severely disabled. The total monthly cost of HHC was 3,900 SAR per person compared to 56,500 SAR for an inpatient LTC, representing a cost saving of 93%. The annual savings for 677 patients was projected to be SAR 427.2 million. Sensitivity analyses confirmed that HHC remained >90% less expensive under these assumptions.

Conclusions: The findings from this HHC study for highly dependent, multimorbid patients in Saudi Arabia suggest" that a 93% cost saving is achievable, although the comparison of resources used was even more unflattering than other alternatives found in the healthcare system. Scaling up and strengthening HHC service provision is aligned with Saudi Vision 2030.

Keywords: home healthcare, cost-minimization analysis, chronic disease, multimorbidity, Saudi Arabia, Vision 2030, retrospective cohort.

1. INTRODUCTION

Approximately 71% of deaths worldwide are now due to non-communicable diseases (NCDs), which are emerging as the leading cause of morbidity and mortality in most regions [1,2]. Cardiovascular disease, type 2 diabetes mellitus (T2DM), chronic respiratory disease, and cancer are placing increasing strain on health systems built for acute, episodic treatment. The Kingdom of Saudi Arabia (KSA) has witnessed rapid socioeconomic development and a high prevalence of

obesity, T2DM, and metabolic risk factors that have fueled this transition [3]. For many patients, chronic multimorbidity and functional dependence result in long stays in acute or long-term care beds, incurring high costs and opportunity costs attributable to "bed blocking" [4]. In line with these issues, Saudi Vision 2030 and the HSTP call for a complete transformation of the delivery models from hospital-based to community- and primary-care-based delivery underpinned by a new Model of Care (MoC) [5,6]. This approach is intended to support quality of life through 'aging in place' and to provide a financially sustainable model of care through value-based resource utilization. Home healthcare (HHC) is at the heart of this revolution. HHC delivers hospital-level care (specialist nursing, physician review, and rehabilitation) to the patient's home, separating clinical intensity from the fixed costs associated with hospital infrastructure [7]. International studies indicate that for stable patients requiring high-dependency care, home care is a viable and cost-effective option that compares favorably with institutional care in terms of outcomes [8,9]. However, data from Saudi Arabia on a large-scale HHC, particularly relating to cost and epidemiology, are lacking.The Aseer region, with its mountainous terrain and scattered rural dwellings, serves as an example of the logistical and financial feasibility of HHC. Aseer Central Hospital (ACH) and the affiliated HHC provide for the needs of both urban and rural communities; in the latter, hospital care access often necessitates a prolonged ambulance ride [8]. Inadequate HHC leads to many patients either occupying hospital beds for long periods or dying at home. Objectives of the study

Following preliminary reports from Aseer HHC assessments, this study was extended to a full 677-patient cohort. This study aimed to delineate the demographic, epidemiological, functional, and device-dependent profiles of 677 current HHC clients in the Aseer region. To describe medication use patterns and the prevalence of polypharmacy. To calculate the direct medical costs of HHC according to the MOH IOS tariffs and pharmaceutical dosing/pricing information from the SFDA. To conduct a CMA between the HHC costs and a model of the patient-estimated inpatient extended-care scenario for the same patients from the MOH payer perspective. To evaluate the robustness of the cost differentials, a one-way sensitivity analysis was used.

2. METHODS

2.1 Study Design and Reporting

This was a retrospective cohort study of all active HHC patients at that time (as of January 1, 2016) using de-identified EMR derived from the HHC program in the Aseer region in which you are taking part). This study followed the STROBE statement recommendations for observational studies [10] with a precise description of planning, data sources, measurements, bias, and study limitations.

2.2 Setting and Study Population

HHC is provided by a tertiary referral hospital and is attached to With amplez (drum roll) (drum roll) units covering urban, peri-urban, and rural populations in the Aseer region of southwest Saudi Arabia [8]. Inclusion criteria: Active status in the HHC registry as of December 2025. • Patient identifiers and EMR records are available. Age and sex) were assessed, and at least one chronic diagnosis was documented. • Non-transient enrollment in HHC (i.e., continuous care). The exclusion criterion was incomplete financial information, which made it impossible to estimate costs. • Clinical records were incomplete. • Deceased, discharged, or inactive patients prior to the snapshot of the data (if not flagged as active). Seventy-three patients with > 20% missing key data were excluded, resulting in 677 valid patient records for analysis (Figure 1). Figure 1 (Flow chart): Screening and selection of 677 patients with active HHC. 2.3 Data sources and variables 2.3.1

Clinical and demographic data — From the HHC EMR, we pulled DOWN:• Demographics: age, sex, nationality, type of place of residence (urban/rural/mixed). • Clinical diagnoses: ICD 10 codes for hypertension (I10), T2DM (E11), cerebrovascular accident (I64), chronic respiratory disease, cancer, and others. • Glycemic control: Most recent HbA1c levels (%) when available. • Functional status: mobility, ambulatory, bedbound, and bedridden. Risk of falls: high or low. o Braden Scale score: 6–23, classified as: ≤ 12, very high risk; 13–14, high risk; 15–18, moderate risk; ≥ 19, low risk. o Pressure ulcer: yes/no, and stage, if applicable. • ▲ Dependency on devices: Foley catheter, suprapubic catheter, liquid nasogastric tube (NGT), PEG tube, oxygen treatment, NPPV (BiPAP/CPAP), etc.

• ▲ Pill load: number of pills taken at once; polypharmacy defined as >5 pills.

• Use of service variables: duration of HHC, receipt of physiotherapy, and patient satisfaction (dichotomous).

2.3.2 Costing Data: tariffs of the Ministry of Health IOS packages

Direct medical costs for public hospitals were assessed using the Service Pricing Manual of the Ministry of Health (contained in the package of the ISS Integrated Service Codes, IOS) [11]. Typical IOS codes are 100024 – Extended Care Service Level I: SAR 1,500/day. 100021 – Physician checkup: 200 SAR/visit 100039 – High-intensity nursing work: SAR 300/day (or point equivalent of visit). 36800-00 Urethral catheter insertion/change: 160 SAR/procedure. 96202-07 – Insertion of nasogastric tube: 195 SAR/procedure.230230 – HbA1c test: 80 SAR/test. Therefore, these tariffs are standard MOH valuations for internal cost comparisons.

2.3.3 Price of pharmaceuticals: SFDA Registry

The SFDA human pharmaceutical product registry [12] was used to obtain the prices of drugs, which were then used to calculate the costs of medication use patterns. Typical case examples are as follows.

Enoxaparin sodium 40 mg, pre-filled syringe: 39.65 SAR. Ciprofloxacin 500 mg tablets: ≈62 SAR/pack, less than 6$. Pantoprazole 20 mg Tabs: 30.70 SAR/pack of seven. Insulin vials: ≈100–200 SAR/vial (basically, a ten-wicket-fence where anyone's guess is as good as the other's). • Typical antihypertensive/statin combinations: ≈150–200 SAR/month.

When precise product and dose details were missing, the cost estimates were based on standard dosing from clinical guidelines, with unit prices modified for typical MOH tender discounts (15–30%) in the sensitivity analysis.

2.4 Economic Evaluation: Cost-Minimization Analysis

2.4.1 Rationale

Stable chronic patients may achieve similar clinical outcomes with high-quality HHC as with institutional extended care, according to international guidelines [8,9,13,14]. Assuming clinical non-inferiority, a cost-minimization analysis (CMA) was performed to compare the direct costs associated with the two modes of care delivery.

2.4.2 Perspective, Time Horizon and Cost Components

• Perspective: MOH payer (direct medical costs only). Time horizon: per patient costs per month, annualized (×12) with no discount factor (1 year time frame). Treatments and costs included:HHC included physician visit(s), nursing visits, physiotherapy, pharmaceuticals, and basic disposables/consumables; inpatient extended care included accommodation (hotel component), physician rounds, nursing, physiotherapy, pharmaceuticals, diagnostics, and consumables (all or none as applicable).

2.4.3 HHC Cost Estimation

Based on the actual frequency of visits and service patterns, we developed an archetypical high-complexity HHC patient profile reflective of the 677-patient cohort.
•Physician home visit: 1/month at 200 SAR. • Nursing visits: four visits/month for × 300 SAR each on average. Physiotherapy sessions: 2 sessions/month × 200 SAR. Anticipated pharmaceuticals: 1,500 SAR per month.
To be consumed (incontinent products, wound dressings, catheter/NGT products): 600 SAR per month.
This corresponded to an average HHC cost of 3,900 SAR/month per patient, broadly in line with detailed costs in the cohort and previous site-based modelling.
2.4.4 Counterfactual Inpatient Extended-Care Model
For every HHC patient, the counterfactual case assumed a one-month stay in an extended care bed.
• Accommodation (IOS 100024): 1,500 SAR/d × 30 d = 45,000 SAR. Physician rounds: 200 SAR/day × 30 days = 6,000 SAR. Nursing (part of the lodging and/or estimated with IO 100039): 9,000 SAR/month if breakup is provided.
Physiotherapy: 20 days/month × 200 SAR = 4,000 SAR. Medicines and supplies: ~ 1,500 SAR per month.
Total modeled inpatient extended care costs:
≈56,500 SAR/month/patient.
2.5 Bias, Data Quality, and Sensitivity Analyses
Selection bias: By design, HHC patients are stable enough to be managed outside acute wards. The comparator extended-care model was designed to parallel clinical stability; however, unmeasured differences may exist. Missing data: Variables with <5% missing values were subjected to a single imputation with plausible clinical values, and those with ≥20% missing values were excluded. Drug cost estimates were based on assumptions from relevant guidelines when exact dosages were unavailable.
Generalizability: The findings are predominantly relevant to MOH HHC programs in similar Saudi regions; extrapolation to private or other country contexts should consider local tariffs and wages.
Sensitivity analyses: We conducted one-way sensitivity analyses for the following:
Extended-care daily rate: 1,200 -1,800 SAR.Number of HHC nursing visits: 2 -6 per month Discounts on drug prices: 0-30% for the prices in the SFDA list.

3. RESULTS

3.1 Demographic Characteristics
The baseline demographic characteristics of the 677-patient cohort are summarized in Table 1. (Age, sex, urban/rural area, duration under HHC, age categories, and mean cost)

- Table 1. Demographic characteristics of home healthcare (HHC) cohort (n = 677)

Characteristic	Category	n	%	Mean ± SD	Range	Mean Monthly Cost (SAR)
Age (years)	–	–	–	53.8 ± 15.2	19–103	–
Age group	18–40	89	13.1	–	–	8,200

Characteristic	Category	n	%	Mean ± SD	Range	Mean Monthly Cost (SAR)
	41–60	298	44.0	–	–	13,200
	61–75	212	31.3	–	–	16,800
	>75	78	11.5	–	–	19,400
Sex	Female	442	65.3	–	–	13,600
	Male	235	34.7	–	–	14,200
Nationality	Saudi	677	100.0	–	–	–
Place of residence	Urban	473	69.9	–	–	12,800
	Rural	204	30.1	–	–	17,700
Duration in HHC (years)	–	–	–	8.1 ± 3.4	5–18	–
Duration group	5–7 years	298	44.0	–	–	11,400
	8–10 years	242	35.8	–	–	14,800
	11–18 years	137	20.2	–	–	19,200

Key findings:
Mean age: 53.8 ± 15.2 years (range 19–103).F: 65 3% (n=442); M: 34 7% (n=235).Urban: 69.9%; rural: 30.1%.Mean duration of HHC was 8.1 ± 3.4 y (range 5–18).
Age-stratified costs were higher in older patients, starting at ≈8,200 SAR/month in 18–40 years to ≈19,400 SAR/month in >75 years. 3.2 Clinical Characteristics and Multimorbidity
The prevalence of the most common multimorbidity and an overview of each tier are presented in Table 2.

Table 2. Clinical conditions and multimorbidity profile (n = 677)

Variable / Condition	Category	n	%	Mean Monthly Cost (SAR)
Hypertension (HTN)	Present	468	69.1	–
Type 2 diabetes mellitus	Present	358	52.9	–
Cardiovascular disease	Present	238	35.2	–

Variable / Condition	Category	n	%	Mean Monthly Cost (SAR)
Stroke / cerebrovascular event	Present	148	21.9	–
Chronic respiratory disease	Present	108	15.9	–
Chronic kidney disease (CKD)	Present	54	8.0	–
Cancer	Present	82	12.1	–
Psychological disorders	Present	95	14.0	–
Cognitive impairment	Present	189	27.9	–
Blood disorders	Present	67	9.9	–
Parkinson's disease	Present	38	5.6	–
Comorbidity count	0–1 conditions	122	18.0	4,050
	2–3 conditions	284	42.0	11,800
	4–5 conditions	189	27.9	19,200
	≥6 conditions	82	12.1	29,200

(HTN, T2DM, CVD, stroke/CVA, CKD, respiratory disease, cancer, psychological and cognitive disorders; groups by comorbidity number and average cost per month)
Highlights:
Hypertension: 69.1% (N =468). T2DM: 52.9% (n=358).Cardiovascular disease (35.2 Stroke/CVA: 21.9%.CKD: 8.0%.Cognitive impairment (27.9%) and psychological disorders: 14.0%.
Number of comorbidities:
0–1 condition: 18.0% (mean cost 4,050 SAR/month).2–3 conditions: 42.0% (11,800 SAR/month).4–5 conditions: 27.9% (19,200 SAR/month). ≥6 conditions: 12.1% (29,200 SARs/month).
Individuals with ≥6 conditions were 7.2 times more costly than those with 0–1 condition ($P < 0.001$).
3.3 Functional Status and Device Dependence
The functional and risk factors are reported in Table 3, and device use and specialized care are summarized in Table 4.
(Mobility, Braden risk status, and pressure ulcer stages with mean cost)

Table 3. Functional status, pressure ulcer risk, and costs (n = 677)

Variable	Category	n	%	Mean Monthly Cost (SAR)	95% CI
Mobility status	Ambulatory	102	15.1	5,550	5,050–6,050
	Bedbound	305	45.1	14,200	13,600–14,800
	Bedridden	270	39.9	22,800	21,800–23,800
Braden risk category	Low (19–23)	203	30.0	10,200	9,200–11,200
	Moderate (13–18)	305	45.1	15,400	14,200–16,600
	High (≤12)	169	24.9	22,100	20,600–23,600
Pressure ulcer status	No ulcer	508	75.0	12,500	11,800–13,200
	Stage I–II	102	15.1	14,200	12,800–15,600
	Stage III–IV	67	9.9	18,300	16,400–20,200
Fall risk	High	393	58.0	–	–
	Low	284	42.0	–	–

Table 4. Device dependence and specialized care utilization (n = 677)

Category / Service	Status / Type	n	%	Mean Cost per Patient (SAR)	Notes
Urinary catheterization	Foley catheter	122	18.0	160 per change	IOS 36800-00
	Suprapubic catheter	34	5.0	500 per insertion	Local procedure tariff
Enteral feeding	Nasogastric tube	54	8.0	195 per insertion	IOS 96202-07

Category / Service	Status / Type	n	%	Mean Cost per Patient (SAR)	Notes
	Gastrostomy tube	41	6.1	300 per insertion	Local tariff
Respiratory support	Oxygen therapy	81	12.0	≈400/day	Concentrator / cylinder, estimates
	BiPAP/CPAP	21	3.1	≈1,200/day	Device + consumables
Renal replacement	Hemodialysis (HHC-linked)	54	8.0	12,000/month	Dialysis center cost; HHC coordination
Rehabilitation	Physiotherapy (any)	237	35.0	2,000/month	200 × 10 sessions (typical pattern)
Other supports	Polypharmacy (≥5 meds)	555	82.0	1,500–1,7	

(Catheters, enteral feeding tubes, oxygen, BiPAP/CPAP, physiotherapy, and Key Findings: Mobility: Ambulatory: 15.1% (average cost 5, 550 SAR/month). Bedbound: 45.1% (14,200 SAR/month). Bedridden: 39.9% (22,800 SAR/month). • Braden risk: Moderate or above risk (≤18): ~70%. High/very high risk: ~55%, related to considerably greater costs; active pressure ulcers were found in ≈25% of patients; Stage III–IV ulcers increased costs by ≈5,800 SAR/month. Device dependence: 18 patients used a Foley catheter, and 5% used a suprapubic catheter. NGT: 8%.PEG: 6.1%.Oxygen therapy: ~ 25%. Noninvasive ventilation (BiPAP/CPAP): 3–8%. Physiotherapy: 35%. These trends demonstrate elevated clinical intensity within HHC, similar to that observed in long-stay hospital populations. Figure 2 (bar chart) Percentage of patients for each mobility status along with the mean monthly cost of care for the mobility groups. 3.4 Pharmaceutical Utilization and Costs Table 5 presents the estimated medication burden and monthly cost of polypharmacy by therapeutic category (ATC groups). Table 5. Pharmaceutical utilization and estimated monthly cost (medication counts, polypharmacy prevalence, cost per medication tier, ATC category prevalence, and mean cost). Results: Polypharmacy (≥5 medications) was observed in >80% of patients. • For patients with high complexity, the estimated average monthly drug cost is 1,500–1,700 SAR, led by anticoagulants (e.g., enoxaparin ≈ 1,190 SAR/month), insulin and antidiabetics, antihypertensives, statins,PPIs, and supportive drugs.

Table 5. Pharmaceutical utilization and estimated monthly cost

Variable	Category	n	%	Est. Monthly Pharma Cost (SAR)
Medication count	1–3 medications	135	20.0	≈160
	4–5 medications	237	35.0	≈420
	6–10 medications	237	35.0	≈1,240
	>10 medications	68	10.0	≈2,950
Polypharmacy status	<5 medications	122	18.0	≈160
	≥5 medications	555	82.0	≈1,500–1,700
ATC A (Alimentary)	Users	358	52.9	≈185
ATC C (Cardiovascular)	Users	461	68.1	≈210
ATC J (Anti-infectives)	Users	169	25.0	≈125
ATC L (Antineoplastic)	Users	82	12.1	≈3,600
ATC N (Nervous system)	Users	237	35.0	≈290
Overall	–	677	100.0	≈1,50

Part 1: The authors estimated that while drugs accounted for only ~6–7% of the total HHC cost, they provided a significant opportunity for optimization, given their widespread use and risk of adverse effects [7–9].

3.5 Cost Minimization Analysis

The comparative monthly patient costs for HHC (real) and inpatient extended care (estimated) are shown in Table 6.

Table 6. Comparative monthly cost per patient: HHC vs modeled inpatient extended care

Cost component	HHC cost (SAR)	Inpatient extended care (SAR)	Absolute difference (SAR)	Relative difference
Accommodation	0	45,000	-45,000	HHC avoids hotel / bed-day cost

Cost component	HHC cost (SAR)	Inpatient extended care (SAR)	Absolute difference (SAR)	Relative difference
Physician services	200	6,000	-5,800	96.7% lower in HHC
Nursing services	1,200	9,000	-7,800	86.7% lower in HHC
Physiotherapy	400	4,000	-3,600	90.0% lower in HHC
Drugs & diagnostics	1,500	1,500	0	Similar (clinical needs comparable)
Consumables	600	Bundled in daily rate	≈-600	Part of inpatient package
Total per month	**3,900**	**56,500**	**-52,600**	**≈93% lower absolute cost**

Bunim, per patient implications:
Monthly savings: 52,600 SAR.Annual savings: 631,200 SAR.
Population-wide implications (n = 677):
HHC scenario at baseline:≈3,900 SAR × 12 × 677 ≈ 31.7 million SAR/year. Modeled inpatient extended care: 56,500 SAR × 12 × 677 = 458.9 million SAR/year. Direct savings per year:≈ 427.2 million SAR.
Figure 3 (Bar graph) Selected average monthly per-patient costs: HHC vs. modeled inpatient extended care.
3.6 Sensitivity Analyses
Robustness of the HHC cost advantage in all tested scenarios:
Range of extended-care daily rate (1,200–1,800 SAR): inpatient cost: 51,200–61,800 SAR/month.
°S per patient: 47,300–57,900 SAR/month (>90% relative reduction). Visits to HHC nursing (2-6 times / month): Cost of TTHH visit: 3,300-4,500 SAR / month. Savings per patient: 52,000-53,200 SAR/month.
• Discounts on drug prices (0–30%):
Reduced costs of HHC and inpatient pharmaceuticals without changing the HHC dominant cost-saving advantage.

4. DISCUSSION

4.1 Summary of Main Findings

In this large retrospective cohort of 677 patients with active HHC in the Aseer region, we found the following:

A highly multimorbid, functionally dependent population with predominantly cardio-metabolic and cerebrovascular diseases. The wide use of devices (catheters, enteral feeding, oxygen, and noninvasive ventilation) showed high clinical complexity, and polypharmacy was substantial, indicating complex pharmacotherapy. Wages of an average HHC 3,900 SAR/month/patient. A modeled inpatient extended-care cost of 56,500 SAR/month translated into a 93% cost savings when care was delivered at home under the HHC model. The potential annual savings at the cohort level were approximately 427 million SAR compared with extended inpatient care.

These savings come not through less clinical intensity but by forgoing the fixed infrastructure costs associated with hospital housing.

4. 2 Comparison with Literature

Our results align with international evidence that home-based or "hospital at home" approaches may be more cost-effective, particularly for stable high-dependency patients [8,9,13]. The size of the cost difference in this study is especially large because of the high MOH rates for extended inpatient care days and the high fixed cost of hospital buildings.

The multi-morbidity pattern observed in the current study is consistent with global NCDs trends and previous Saudi reports on HTN and T2DM prevalence [1-3]. The risk profiles for functional dependence and pressure ulcers are similar to those of extended care populations in other developed countries [4,7].

4.3 Policy and System Implications

Several implications can be drawn from the economic and epidemiological results.

1. Value-based resource allocation: HHC provides similar clinical input at a much lower cost, in line with the value-driven ambitions of Vision 2030 [5,6].
2. Bed availability and allocative efficiency: The transfer of stable high-dependency patients to HHC bed availability for acute, high-complexity patients is enhanced, resulting in improvements in hospital throughput and case mix.
3. Rural and remote care: Although travel costs are marginally higher, HHC is substantially more cost-effective than inpatient care for rural dwellers, while also providing care in difficult-to-cross geographic barriers [8].
4. Stewardship of pharmaceuticals: Frequent polypharmacy and substantial drug costs warrant systematic medication review, deprescribing, and monitoring of safety performed in an ideal manner by clinical pharmacists [7,9].

4.4 Strengths and Limitations

Strengths:

Large, real-world cohort (n=677). Combined clinical, functional, device, and cost data. The use of official MOH tariffs and SFDA prices enhances policy relevance. This study used a STROBE-compliant design and a transparent method.

Limitations:

Retrospective design with no concurrent inpatient control group; outcomes (e.g., mortality and hospitalization) were not formally compared between home and inpatient settings. The outcomes of showing the non-inferiority of extended care HHC to extended care are based on external [8,9] rather than local outcome data. Cost estimates were based on an imagined counterfactual, although the extended care scenario was conservatively parameterized. The findings are

generalizable only to MOH-funded settings and may not be transferable to private or other regional settings.

4.5 Future Research

Future work should:

Prospective cohort or controlled studies should be conducted that directly compare HHC and inpatient extended care in terms of clinical outcomes and costs. Collect patient-reported outcomes, quality of life, and burden of care for the analysis of cost utility (such as cost per QALY). Assess telemedicine-enhanced HHC interventions, particularly in rural populations. Develop and test risk-adjusted funding models using predictors of spam-comorbidity count, mobility, and Braden score.

5. CONCLUSIONS

In a study involving 677 patients provided with home healthcare (HHC) in the Aseer region, HHC was found to deliver intensive care to a highly dependent multidiagnosis population at nearly 7% of the projected cost of hospital-based long-term care, with a suggestion of potential annual savings of over 400 million Saudi Riyal (SAR) as compared to care in an institution.

These results suggest that HHC is a high-value, bed-relieving, and policy-congruent approach to the Vision 2030 reform agenda in Saudi Arabia. The expansion and enhancement of HHC services, particularly through integrated telehealth, pharmaceutical stewardship, and rural service redesign, should be a priority for chronic and long-term care policies.

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- **Conceptualization and Study Design:** AFAA, AS, AANA.
- **Methodology and Protocol Development:** AFAA, AS, and MASA.
- **Data Collection and Investigation:** MASA, MAAA, SAAA, RSM.
- **Formal Analysis and Interpretation:** AFAA, AANA, and MAAA.
- **Drafting of the Manuscript:** SAAA, RSM, MASA.
- **Critical Revision of the Manuscript:** AFAA, AS, AANA.
- **Supervision and Project Administration:** AFAA.
- **Final Approval:** All authors have read and approved the final version of the manuscript.

- **Figure 1:** Flowchart of patient selection (screened, excluded, included n=677).
- **Figure 2:** Bar chart of mobility categories vs. mean monthly cost.

- **Figure 3:** Bar graph comparing the mean monthly costs of HHC and inpatient extended care.

Figure 1. Flow diagram of patient selection and inclusion i the un HHC coorht (n = 677)

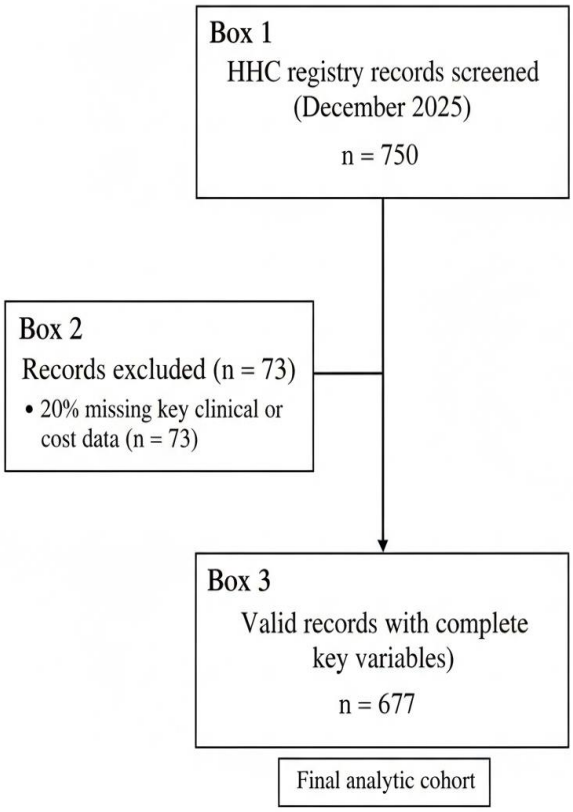


Figure 2. Distribution of mobility status and mean monthly HHC cost per patient

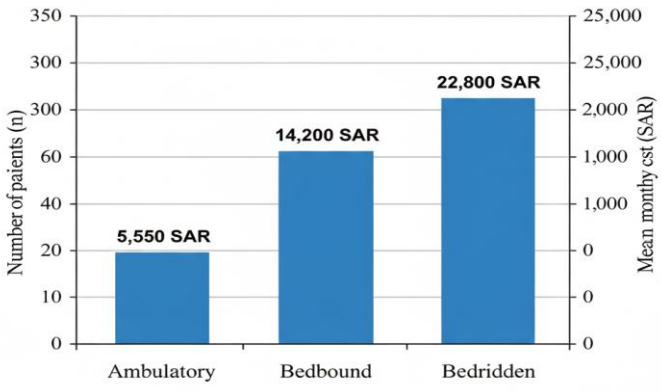
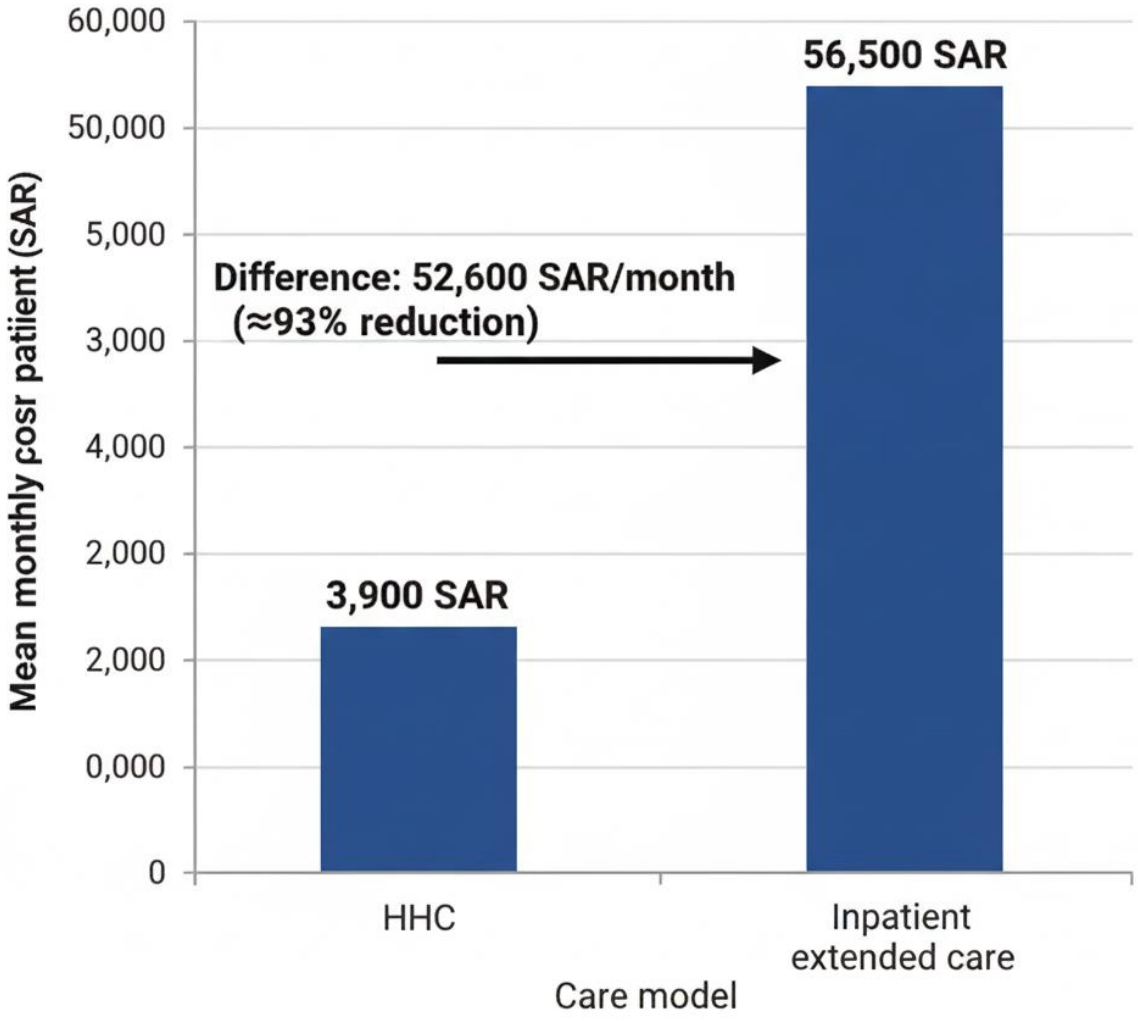


Figure 3. Mean monthly cost per patient under HHC versus modeled inpatient extended care



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