



## **ECONOMIC GAP IN THE QUALITY OF HEALTHCARE UTILIZATION UNDER UNIVERSAL HEALTH COVERAGE: EVIDENCE FROM THE DUBAI HOUSEHOLD HEALTH SURVEY 2018-2022.**

BY

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The Insurance System of Advancing Health in Dubai (ISAHD) law, enacted in 2013 and mandating health insurance for all Dubai residents starting in 2016, aimed to examine the impact of ISAHD on healthcare utilization and out-of-pocket (OOP) expenditures across different economic subgroups. This research utilized data from the Dubai Household Health Survey (DHHS) conducted in 2018 and 2022, a representative survey of the city-state's population. The DHHS was stratified into four categories: Nationals, Non-nationals living in households, Non-nationals in collective housing, and Non-nationals in labor camps. To analyze the data, the probability that each household would incur expenditures was calculated, followed by multiplying this probability by a weighted estimate of the average total OOP expenditure. This approach provided an accurate measure of quality healthcare spending across the different subgroups. The results indicated a substantial increase in quality healthcare spending in Dubai, rising from 12.8 billion AED (3.4 billion US \$) in 2018 to 16.8 billion AED (4.6 billion US \$) in 2022. Concurrently, the OOP share of total health spending decreased significantly, from 25% in 2018 to 13% in 2022. The study revealed an overall increase in the utilization of outpatient, inpatient, and discretionary services from 2018 to 2022 for most groups, except for non-nationals residing in labor camps. In 2022, nationals had the highest per capita OOP expenditure at 1064.65 AED, followed by non-nationals in households at 675.01 AED, non-nationals in collective housing at 82.35 AED, and non-nationals in labor camps at 100.32 AED. The introduction of ISAHD led to a significant rise in OOP spending per capita for both nationals and non-nationals in households, attributed to increased quality healthcare utilization. However, lower-income non-national households did not experience a similar increase in OOP spending. In conclusion, the ISAHD policy has effectively shifted the financial gaps of quality healthcare from households to the government and employers, resulting in reduced OOP expenses for residents. While healthcare utilization increased for Emiratis and expatriate households' post-ISAHD, blue-collar workers did not see the same benefits. Addressing non-financial barriers to healthcare for Dubai's blue-collar workforce remains essential.

**Keywords:** Economic gap, UHC, Healthcare utilization, Quality of healthcare

## 1. INTRODUCTION

The objective of universal health coverage (UHC) is to guarantee that all people may affordably obtain high-quality medical treatment [1]. Poverty and income inequality as they pertain to health can be lessened with this. Universal health coverage (UHC) can only be realized when all people are enrolled in a system that ensures their financial stability and have access to high-quality health services for prevention, promotion, treatment, and rehabilitation. It is critical to have universal health coverage because unexpected medical expenses can put families in a difficult financial position [1, 2]. Dubai, one of the seven emirates that comprise the United Arab Emirates, has made great strides toward providing health insurance to all of its residents. The healthcare sector accounted for 4.6% of Dubai's GDP in 2018. With the exception of the Dubai Health Care City Authority (DHCA), the free zones—special economic zones or regions in Dubai created to offer tax concessions and customs duty benefits to foreign investors—are supervised and regulated by the public organization known as the Dubai Health Authority (DHA). Enhancing private sector involvement and offering strategic sector monitoring are other tasks of DHA. Public and private facilities are regulated, licensed, and managed by DHA, in addition to receiving funding from the government. A lesser number of facilities are overseen by the DHA, the DHCA, and the MOHAP, which stands for the Ministry of Health and Prevention.

There were almost 4.875 million people living in Dubai in 2018. Among them, 1.48 million were non-citizens residing in another emirate who were in possession of a Dubai visa. In terms of nationality, 11% of Dubai's residents are Emirati and 89% are foreign nationalities. According to 2018 statistics, almost 16 million tourists visit Dubai every year. Around 60% of the population works in blue collar jobs, and their pay are notoriously low. Blue collar expats tend to travel for shorter durations than white collar expats during peak demand in the construction and infrastructure industries. Once the projects are completed, they go back to their homes. Before the healthcare funding adjustments in 2013, all Emiratis residing in Dubai could get free healthcare from public providers. Furthermore, their publicly subsidized health insurance covered the majority of services that were offered by private entities. Nearly all residents of Dubai who were not Emiratis used to have to pay to use the healthcare system, with the exception of special services

for pregnant women and their children [3]. The expats may be able to afford healthcare through their own plans, plans offered by their employers, or by paying out of pocket. In addition, government health coverage plans were accessible in the UAE, enabling citizens to get affordable medical care at any facility overseen by the Ministry of Health [3]. Income and citizenship status were the most important factors in explaining the large gaps in healthcare coverage and accessibility across various demographic groupings [4, 5].

The growing disparity between Dubai's citizens and those of surrounding nations in terms of price and accessibility to high-quality healthcare prompted the city to institute policies with the goal of attaining Universal Health Coverage (UHC). In November 2013, the government of Dubai issued Law 11, which is also known as the Insurance System of Advancing Health in Dubai (ISAHD). Starting in 2016, it will be mandatory for all Dubai residents to get health insurance. The law was progressively applied across Dubai with the aim of reducing health care inequities. There was an initial 2013 phase that was pre-ISAHD, a 2013–2015 implementation period, and a 2016 post-implementation phase. Health insurance is a legal requirement in the ISAHD for both employers and employees. The Dubai government mandated its use for all work permits. This strategy ensures that all inhabitants of Dubai have access to cheap healthcare by safeguarding the funding system and prohibiting individuals who believe they are at low risk from choosing not to acquire insurance. People with private health insurance can choose between public and private healthcare facilities. In addition, all expat employees and their families (spouse and up to three children under 21 years old) can get health insurance through the ENAYA Program, and all citizens of Dubai can get coverage through the SAADA Program. As a population, we can gauge the ISAHD law's success by seeing if people spend less money out of pocket (OOP). One more way to measure performance is by seeing an increase in the number of persons using health services. An equitable distribution of health care use patterns among economic groups is a third measure of success. Age can play a role in the specific requirements of expatriate blue collar and white-collar workers.

## **2. POPULATION SELECTED FOR ANALYSIS**

Members of the United Arab Emirates nationality living in the Emirate of Dubai, foreign nationals holding work visas issued by Dubai and residing in Dubai, foreign nationals holding

work visas issued by Dubai but residing outside of Dubai, and visitors to Dubai make up the bulk of the population using the Dubai healthcare system. Only the first two categories are officially counted as residents of Dubai by the Dubai Statistics Centre. Employers in Dubai, whether public or private sector, are required by law to provide health insurance to all workers with a Dubai work visa, regardless of where they live. Thus, the first three categories will be taken into account in this study. In addition, the type of residence allows for the categorization of non-nationals. They may be residing in individual homes, communal dwellings, or work camps. In comparison to their domestic counterparts, non-nationals living in labor camps are considered to be in a lower economic status. People living in shared housing tend to be in the middle class socially. Due to seasonal variations in the population of short-term tourists, this study does not encompass health spending by tourists.

### **3. METHODOLOGY - DHHS (2018-2022).**

When it comes to healthcare quality and health-related issues, no other survey compares to the Dubai Household Health Survey (DHHS). The study gives a statistically valid and representative picture of important healthcare and health-related characteristics for the whole Dubai population. From 2009 to 2018, and again from 2018 to 2022, it was held three times. Stratified cluster sampling with many stages was the basis for the 2018 and 2022 surveys. After applying weights, the sample was prepared to be representative of the following four subpopulations: citizens of the United Arab Emirates, non-nationals residing in private residences, non-nationals residing in public housing, and non-nationals residing in work camps. Household health expenditure, access to health services, exercise levels, dietary habits, lifestyle diseases, mental health, and utilization of public and private health services in Dubai were among the many topics covered in-depth during the in-person surveys that were conducted in these randomly selected households. With the help of the Dubai Statistics Center (DSC) for logistics and field work, DHA created the 2018 survey, which had a 96% response rate. This survey took its cues from the World Health Organization's World Health Surveys (WHS), the National Health Interview and Examination Surveys (NHIES) conducted by the United States Center for Disease Control, and the Living Standards Measurement Surveys (LSMS) conducted by the World Bank.

Because residents of the United Arab Emirates were oversampled, the Dubai Statistics Center applied importance weights. Following adjustment for weights, the sample was statistically valid for the 5.2 million people living in Dubai in 2018. The 2018 sample included 9630 individuals from 2200 dwelling units; 5665 were citizens of the UAE, 2342 were non-citizens living in households, 1335 were non-citizens residing in communal housing, and 288 were non-citizens dwelling in labor camps. There were 3,271 individual dwelling units in the 2018 sample and 2,200 in the 2022 sample. The Dubai Health Authority's institutional review board gave their approval to the survey. The surveyors were all well-versed in collecting self-reported spending data and spoke with a household member who was 15 or older and might shed light on recent medical expenses. After gathering basic demographic information and a list of all household members, the surveyor inquired as to whether anyone had used out-patient services in the past 30 days, if anyone had made any unusual purchases of medical supplies or over-the-counter medications in the past 30 days (including things like blood pressure monitors, orthopedic supplies, medications, and blood sugar monitors), and if anyone had stayed in the hospital overnight in the past 12 months. We investigated the total out-of-pocket spending for different categories of discretionary spending, outpatient spending, and inpatient spending after adjusting for the appropriate weights. In households where more than one member had experienced outpatient utilization in the last 30 days, we randomly selected one member and collected details of their medical events. Each member of the household was requested to complete out an inpatient module questionnaire if they had an overnight inpatient stay within the past twelve months.

#### **4. DATA - SYSTEM OF HEALTH ACCOUNTS 2018–2022**

For the purpose of triangulation, we utilized results from the published System of Health Accounts (SHA) from 2018 to 2022 to verify that the out-of-pocket spending estimates derived from the survey data were correct for the specified population [6].

#### **5. DATA ANALYSIS**

We determined the likelihood that each of the four types of households will incur any out-of-pocket expenses (discretionary, inpatient, outpatient, or inpatient) in our DHHS analysis. The

household survey for outpatient spending covered the total number of visits to the doctor within a 30-day period as well as the total number of hospitalizations within a 12-month period. Next, we took the odds of spending for each household type and multiplied them by an estimated weighted average of the total out-of-pocket expenses for that type of incident every year. In order to account for the frequency of several outpatient visits each month, the estimates were revised. This adjustment had a small impact on the estimates of hospitalization incidence and expenditures because only 5 households reported more than one hospitalization per month. It is possible for outliers to significantly distort estimates of average anticipated expenditures in small samples of health care expenditure data. The DHHS health expenditure statistics confirmed this. In order to minimize the impact of outliers higher than the 99th percentile, all average health spending estimations were adjusted accordingly.

To get a sense of how much money each of the four categories of households spent last year, we averaged their out-of-pocket medical and discretionary costs from the past 30 days. As a last step, we multiplied the 2018 total annual spending by the estimated proportion of each household type in the Dubai population in 2014. This proportion was based on government data showing that there were 8% UAE citizens, 42% UAE non-nationals living in households, 11% in collective housing, and 39% in labor camps. To get to 2019, 2020, and 2021, we used the 2018 and 2022 data on out-of-pocket spending and linearly extrapolated it, taking into account changes in the overall population and assuming that the proportion of different types of households were constant. In order to express prices in real AED with a baseline of 2018, costs from other years were inflated and deflated using the consumer price index.

## **6. OVERALL FINDINGS AND DISCUSSION**

In Fig. 1, we can see how the implementation of ISAHD affected healthcare utilization and household expenditures across different demographic subgroups as seen through the System of Health Accounts. The figure illustrates the changing proportion of healthcare funding coming from various sources, including publicly financed healthcare, private insurance, mandatory insurance, and out-of-pocket spending by families. We find that compulsory insurance plans have entirely supplanted voluntary insurance schemes since the implementation of ISAHD. After ISAHD was

put into place, the overall out-of-pocket spending by households for the entire population dropped significantly (6, Fig. 1). For each of the four study demographics, Table 1 displays the evolution of health utilization from 2012 to 2022. Emirati nationals typically have a greater utilization probability. Keep in mind that the percentage of elderly people living in homes headed by Emirati nationals is much higher than that of non-Emirati households. Almost every demographic saw an uptick in service utilization across the board when it came to various forms of health care. Except for Non-Emiratis residents of communal housing, there was no discernible uptick in inpatient utilization. According to Table 2, which provides an estimate of the total yearly spending, non-nationals living in households spent AED 219.15 per capita in 2018 and nationals spent AED 182.83 per capita. Because Emirati nationals in collective housing were more likely to use outpatient and inpatient services than non-Emiratis, the relative differences were driven by this fact (See Footnotes to Table 1). Additionally, because Emirati nationals had higher incomes, the proportion of their income that went toward outpatient services was lower.

Fig. 1 Trends in Health Financing Schemes, Dubai (2012-2022)

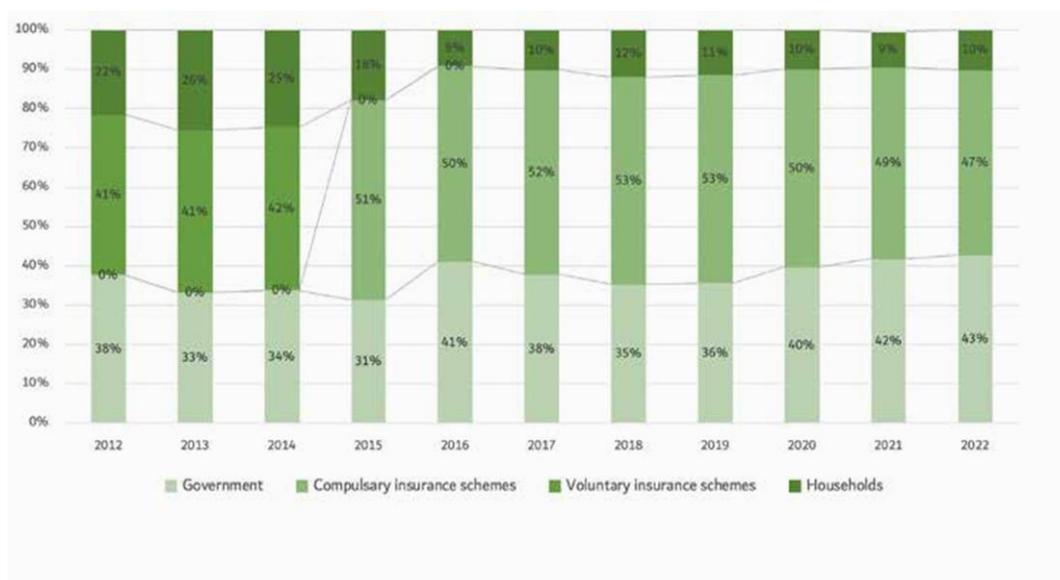


Table 1 Probability of Healthcare Utilization in 2019 - 2022

Group	Year	Any Discretionary Utilization [1]	Any Outpatient Utilization in Month [2]	Any Inpatient Utilization in 12 Months [3]
Emirati Nationals	2018	0.9%	11.7%	4.6 %

Non-Emiratis living in Households	2022	2.4%	19.3%	7.9 %
	2018	0.7%	8.4 %	2.9 %
Collective Housing	2022	4.1%	15.8 %	4.6 %
	2018	0.3%	3.4 %	9 %
Labor Camps	2022	0.3%	5.3%	0.97%
	2018	0.2%	5.6%	1.2 %
	2022	0.0%	14.8%	3.5 %

[1] Z-statistic =1.83 (Pr = 0.07) for 2018 difference between Emiratis and non-Emiratis in Collective Housing

[2] Z-statistic =8.47 (Pr = 0.00) for 2018 difference between Emiratis and non-Emiratis in Collective Housing

[3] Z-statistic =4.75 (Pr = 0.00) for 2018 difference between Emiratis and non-Emiratis in Collective Housing

Table 2 Total OOP per capita (AED) for Different Healthcare Services

Year	Population Sub-Group	Total OOP Discretionary Spending per capita	Total OOP Outpatient Spending per capita	Total OOP Inpatient Spending per capita	Total OOP Spending per capita	Total OOP as Share of Income
2018	Nationals	48	135	4	186	0.04%
	Non-Nationals in Households	44	176	8	220	0.06%
	Non-Nationals in Collective Housing	17	63	1	78	0.09%
	Non-Nationals in Labor Camps	1	40	0	42	0.19%
2022	Nationals	465	489	120	1066	0.18%
	Non-Nationals in Households	285	350	47	676	0.22%
	Non-Nationals in Collective Housing	4	80	0	84	0.08%
	Non-Nationals in Labor Camps	0	83	20	101	0.46%

In 2018, when the health insurance changes were fully implemented, the following amounts were spent on healthcare expenditures: 518 million AED by nationals, 1496 million AED by non-nationals in households, 63 million AED by collective households, and 118 million AED by labor camps. From 183 to 1065 AED, there is a 482% increase in out-of-pocket expenses for Emirati nationals, while the group of non-nationals living in collective homes experiences the lowest growth, at 8% from 76 to 82 AED. Outside of collective families, all other groups saw a significant increase of more than 1% in the proportion of their income that came from out-of-pocket expenses in 2019. From 2018 to 2022, the non-nationals residing in labor camps had a 60% rise in their total out-of-pocket healthcare spending per capita, going from 0.18% to 0.44% of their income (Table 2, Fig. 2).

Both domestic citizens and non-nationals had a significant increase in their aggregated total out-of-pocket spending over the ISAHD implementation period. Table 3 and Figure 3 show that the

other two demographic groups' growth was significantly slower. It was also noted that the Nationals had a greater increase in out-of-pocket spending per capita compared to the Non-Nationals. Households with lower incomes experienced absolutely no growth, as previously observed (Fig. 4). The utilization and expenditure patterns for various healthcare services differed among the population subgroups following the adoption of the ISAH. Expenditures for outpatient care were higher than those on inpatient and discretionary care in the past. By 2018, outpatient and discretionary services have surpassed inpatient care in terms of spending by both nationals and non-nationals. On the other hand, non-nationals living in shared housing boosted the share of their budget that went toward

Table 3  
Expenditure  
from 2018 to 2022

	Indicators	2022	
1.	Health expenditure )HE( % Gross Domestic Product (GDP)	5.2%	
2.	General Government Expenditure on Health )GGHE( as % of GDP	2.2%	
3.	General Government Expenditure on Health )GGHE( as % of HE	43%	Total OOP (Million AED)
4.	Private Expenditure on Health )PvHE( as % of HE	57%	

Population	2018	2019	2020	2021	2022
Nationals	5. Out-Of-Pocket expenditure as % of HE 35 M	56 M	412 M	10% 308 M	518 M
Non-Nationals in Households	6. Out-Of-Pocket expenditure as % of PvHE 336 M	343 M	190 M	18% 466 M	1496 M
Non-Nationals in Collective Housing	7. Private Insurance as % of PvHE 31 M	32 M	51 M	82% 62 M	64 M
Non-Nationals in Labor Camps	8. Expenditure on In-patient care as % of HE 56 M	57 M	94 M	24% 116 M	118 M
	9.	Government Expenditure on In-patient care as % of GGHE	24%		
	10.	Prevention and Public Health services as % of HE	1.4%		
	11.	Medical goods as % of HE )not including IP(	15%		

### 7. LIMITATIONS

With this analysis, a few caveats must be considered. First of all, the DHHS data is self-reported, thus it can't be used to determine out-of-pocket costs for non-traditional media. In order to get more accurate estimates from the Emirati Nationals, the DHHS applied sample weights and oversampled this demographic. The estimates of health expenditure are vulnerable to outliers with very high or very low use or expenditure levels. We suppressed observations of expenditure above

the 99%ile to limit this distortion in our study. Furthermore, blue-collar workers may be difficult to accurately survey due to language and cultural obstacles. The official System of Health Accounts in Dubai was used to validate the DHHS reports against electronic claims handled by the Dubai Health Authority.

## **8. FUTURE STUDY**

To address these limitations and build on the findings, future studies should consider conducting longitudinal studies to track changes in healthcare utilization and health outcomes over time, particularly in response to policy changes or new interventions. This approach will help in understanding the long-term impact of UHC policies. In-depth qualitative research, including interviews and focus groups with various demographic groups, should supplement quantitative data to gain deeper insights into barriers to healthcare access and utilization. Geospatial analysis can identify areas with high disparities in healthcare access and quality, enabling more targeted interventions.

Future research should also investigate the levels of health literacy and the effectiveness of health education campaigns, as these factors are crucial in designing interventions to improve healthcare utilization among lower-income groups. Further exploration of how different economic factors, including income, employment type, and housing conditions, influence healthcare utilization and outcomes is essential, with special attention given to blue-collar workers and those in labor camps. Evaluating the effectiveness of current health insurance programs, such as the ENAYA and SAADA Programs, in reducing out-of-pocket expenses and increasing healthcare utilization among different income groups is another important area for future research. Performing cost-benefit analyses of existing and proposed healthcare policies will help determine their economic feasibility and potential impact on reducing disparities.

## **9. CONCLUSIONS**

To avoid catastrophic health expenditure and guarantee that all residents of Dubai have access to inexpensive health care was the primary objective of ISAHD. In

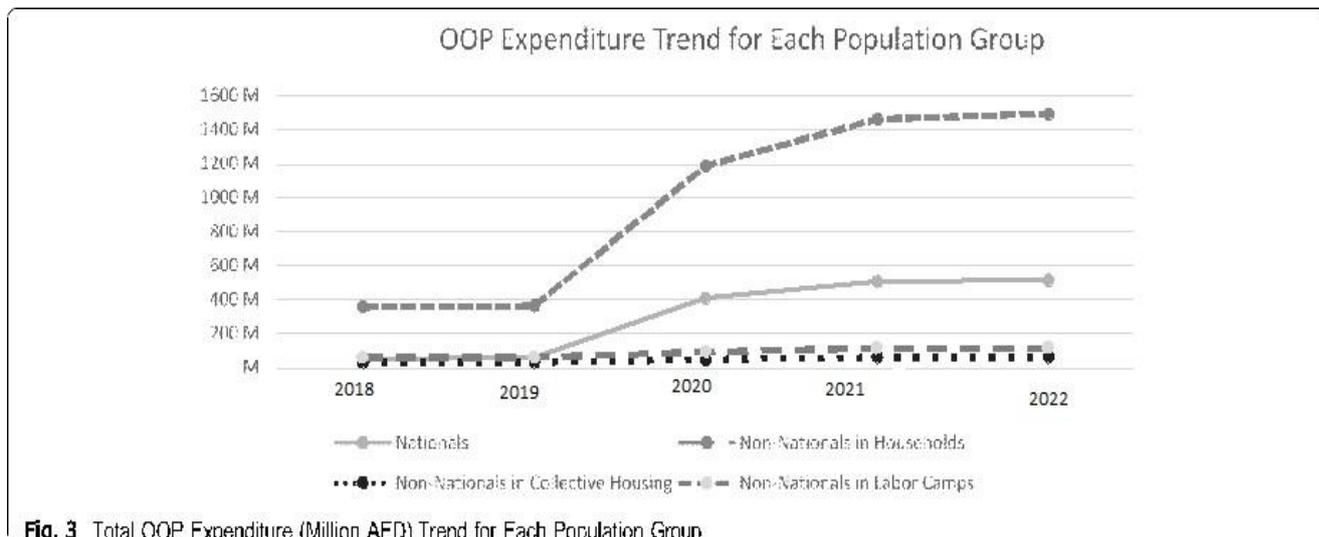


Fig. 3 Total OOP Expenditure (Million AED) Trend for Each Population Group

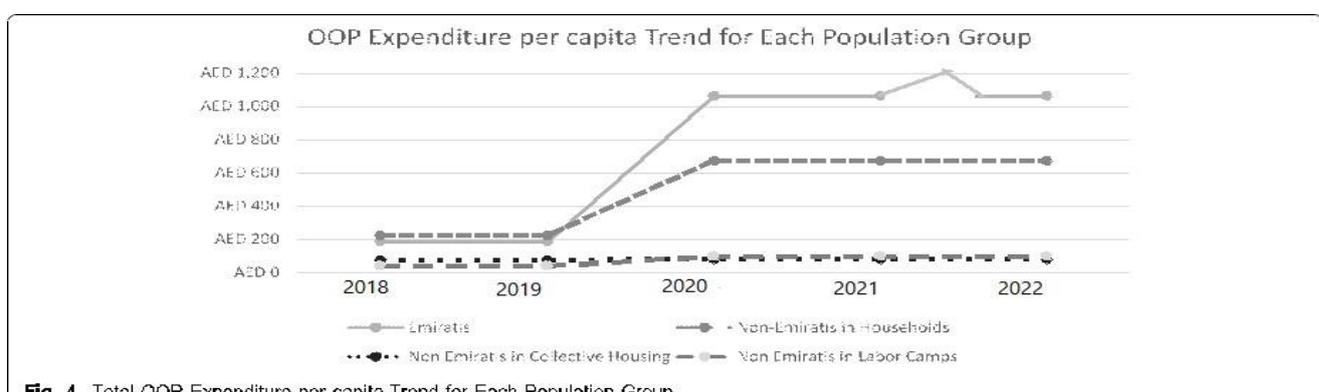


Fig. 4 Total OOP Expenditure per capita Trend for Each Population Group

Table 4 Comparison of health service Total OOP spending and its proportional makeup - 2018 vs 2022

Year	Population sub-group	Total OOP Expenditure per capita (AED)	Share of Discretionary Expenditure	Share of Outpatient Expenditure	Share of Inpatient Expenditure
2018	Nationals	187	25%	68%	3%
	Non-Nationals in Households	222	21%	75%	3%
	Non-Nationals in Collective Housing	78	20%	78%	0%
	Non-Nationals in Labor Camps	45	3%	93%	0%
2022	Nationals	1068	45%	44%	10%
	Non-Nationals in Households	685	38%	49%	7%
	Non-Nationals in Collective Housing	87	5%	88%	0%
	Non-Nationals in Labor Camps	112	0%	78%	18%

Furthermore, the implementation of ISAHD was driven by a desire to enhance the health of all citizens, particularly those with lower incomes. Private or public health insurance have reached 100% coverage by 2020. Dubai has achieved a remarkable feat in lowering the out-of-pocket percentage of healthcare expenditures from 25% in 2018 to 12% in 2022, putting it on level with the majority of OECD nations. It is clear that the government and businesses are now bearing a larger share of the healthcare cost gap when comparing the 2021 forecasts to earlier SHA studies [6-8]. Outpatient and discretionary care accounted for the lion's share of out-of-pocket medical

expenses. After ISAHD, health service utilization for Emiratis and expatriate households rose and then stayed around the same. Higher insurance coverage mostly causes people to buy more medical goods, which in turn increases utilization. Insurance reduced patients' effective out-of-pocket costs for medical products while increasing their utilization and total out-of-pocket spending.

Emiratis and expat white-collar households' insurance-induced changes in medical utilization after ISAHD's implementation support the findings of the RAND and Oregon Health Insurance experiments, which demonstrated that greater coverage stimulates greater utilization [9, 10]. Compared to more affluent segments of society, non-nationals living in communal housing and in labor camps react quite differently to increased access to health insurance. There was no rise in the per capita usage of health services among collective homes or expatriate populations housed in labor camps. Based on the number of new insurance contracts, we validated internal reports that showed an increase in coverage for new blue-collar workers who enrolled. There is evidence that the mandated coverage mandated by the ISAHD was successfully implemented. These populations did not exhibit the usual uptick in utilization following health insurance enrollment for some other explanation. The blue-collar workers in Dubai have lower wages and fewer economic connections to the resources needed to treat their health requirements, which contributes to their high rate of population migration [11]. As a result of natural selection, migrant populations tend to be healthier than their host populations [14]. Migrants may face difficulties accessing quality health care due to their lower economic status in the host nation; as a result, they may seek treatment at urgent care centers or emergency rooms rather than at outpatient specialty clinics [15]. Many Middle Eastern blue-collar migrant workers, like their counterparts elsewhere, have severe shortages in healthcare access [12–15]. Migrant workers from low-income groups are more likely to suffer from mental illness and work-related injuries, according to studies of Middle Eastern immigrants [16–22]. Injury rates among migrant construction workers are disproportionately high [18, 19]. Negative effects on their mental, emotional, and economic health may result from acculturative stress, family separation, and discrimination, all of which they face at a high risk [13].

It was believed that blue-collar workers would have easier access to and use of high-quality health services after the reform's introduction of ISAHD and emphasis on employer health insurance

eliminated financial obstacles to health care. On the other hand, we did not discover evidence of a significant uptick in medical visits. Expatriate blue collar workers may not have needed health care services as much to begin with, either because of a healthy migrant effect or their relative youth, therefore better insurance did not lead to a rise in utilization. However, this is a highly implausible theory. Employees may be hesitant to seek medical treatment due to factors other than financial constraints. Challenges in scheduling, transportation, and logistics; language and cultural hurdles; health literacy; and coverage knowledge are all part of this list [23–29]. Considering these variables, it's not out of the question that workers are unaware of treatable diseases or are reluctant to seek care due to a lack of knowledge about accessible services and health coverage [23–29]. A lack of job security and the fear of being sent back to their home country due to an employer's illness suspicions are additional concerns [30]. This study's findings corroborate those of previous research showing that migrant workers use less healthcare services; however, the data do not indicate whether this is due to improved health or poorer non-financial barriers to use, or both [23–30]. It should be a top priority to understand the remaining barriers to care for Dubai's blue-collar workers if the goal of ISAHD was to improve the health outcomes of all inhabitants by providing them with a safety net of adequate health coverage [31]. The challenges that employees have while trying to get medical treatment should be a primary emphasis of any future healthcare reforms. Recent arrivals as migrant workers should be compared to those who have been in the nation for longer in order to understand their use patterns [27]. Health literacy, health coverage awareness, and logistical access to healthcare providers could all benefit from interventions such as government and employer-organized programs in cultural competency for clinicians and outreach in several languages [32–36].

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