

# Could the employment-based targeting approach serve Egypt in moving towards a social health insurance model?

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هل ساعد أسلوب الاستهداف المرتكز على التوظيف في مصر في التقدم نحو نموذج تأمين صحي اجتماعي؟  
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الخلاصة: يستهدف نظام التأمين الصحي الاجتماعي الحالي في مصر الفئة المنتجة من السكان خلال خطة تركز على الموظفين، ولها حدود قصوى وفقاً لسقف التكاليف التي تُنفق، وترتكز على الرعاية العلاجية. وقد استخدمت المعطيات المستمدة من مسح العقد الاجتماعي المصري لعام 2005 لتقييم الآثار المترتبة على الخطة المرتكزة على التوظيف، من حيث إمكانية التوصل للنظم الصحية، ومن حيث تمويلها. وقد أسفر التقييم عن أن 22.8% فقط من السكان في الفئة العمرية المنتجة قد استفادوا من هذه الخطة، وهم ممن تتراوح أعمارهم بين 19 و59 عاماً. وأن هذه الخطة تغطي 39.3% من العاملين، وهي منحازة نحو سكان المدن، والمسنين، والإناث، والأغنياء. ولم تؤد الخطة إلى الازدياد في الاستفادة من الخدمات، ولكنها أنقصت من النفقات المباشرة التي يدفعها المشمولون بها من جيوبهم. وانتهى المقال إلى القول بأن على مصر أن تمزج جميع خطط التأمين الصحي، وأن تتبنى أسلوباً مبتكراً للوصول إلى التغطية الشاملة.

ABSTRACT The current health insurance system in Egypt targets the productive population through an employment-based scheme bounded by a cost ceiling and focusing on curative care. Egypt Social Contract Survey data from 2005 were used to evaluate the impact of the employment-based scheme on health system accessibility and financing. Only 22.8% of the population in the productive age range (19–59 years) benefited from any health insurance scheme. The employment-based scheme covered 39.3% of the working population and was skewed towards urban areas, older people, females and the wealthier. It did not increase service utilization, but reduced out-of-pocket expenditure. Egypt should blend all health insurance schemes and adopt an innovative approach to reach universal coverage.

**Le ciblage fondé sur l'emploi est-il une approche pouvant aider l'Égypte à s'orienter vers un modèle d'assurance maladie sociale ?**

RÉSUMÉ Le système d'assurance maladie égyptien actuel cible la population active au moyen d'un dispositif fondé sur l'emploi, limité par un plafond de coûts et axé sur les soins curatifs. Les données de l'enquête sur le Contrat social égyptien réalisée en 2005 ont permis d'évaluer les effets du dispositif fondé sur l'emploi sur l'accessibilité et le financement du système d'assurance maladie. Seuls 22,8 % de la population en âge de travailler (de 19 à 59 ans) bénéficiaient alors d'une couverture maladie. Le dispositif fondé sur l'emploi couvrait 39,3 % de la population active et avantagerait les zones urbaines, les personnes âgées, les femmes et les personnes les plus aisées. Il n'a pas contribué à augmenter l'utilisation des services, mais a diminué les paiements directs. L'Égypte devrait fusionner tous les dispositifs d'assurance maladie et adopter une approche innovante afin de parvenir à une couverture universelle.

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## Introduction

Egypt is currently working on reforming its health insurance system as part of a nationwide reform of health care. In the government's sixth 5-year plan, Egypt is targeting a gradual expansion of health insurance to cover new segments of the population, until universal coverage is achieved by 2012 [1].

The development of the insurance scheme in Egypt has 2 incremental phases. The first phase started with the 1936 law to insure blue-collar workers against occupational accidents, later expanded to cover health care services rather than just occupational accidents. The second phase started with the presidential decree that announced the birth of the health insurance organization (HIO) in 1964, aiming to provide health insurance for industrial workers and civil servants. Under the control of the Ministry of Health and Population (MOHP), the HIO acts as service purchaser and provider through several rented or owned clinics and hospitals. Since then, more socio-professional groups have been brought into compulsory insurance, albeit still mainly targeted on the public sector workforce. There were 3 important landmarks to this phase: in 1981 the families of insured individuals were brought under coverage; in 1992 the school health insurance law was issued to cover all enrolled students; and in 1997 insurance coverage was expanded to children under school age.

Health insurance in Egypt is funded by government subsidy together with users' and employer contributions, as well as cigarette taxation for the school health insurance scheme. For the employment-based scheme, a fixed percentage of the salary is collected from both the employee and the employer, while for the other schemes, a fixed sum of money is charged from the beneficiary [2]. The health insurance system functions with an upper limit on the cost of the health care and focuses on

curative care. In cases where the cost of medical care exceeds the threshold, limited exemptions are made with official approval from the MOHP.

The current health insurance system is being expanded towards a social health insurance model that involves compulsory membership, universal coverage and pooling of risk [3,4]. Evidence of the impact of the current health insurance schemes on health system performance is insufficient. The few available studies focus on the school health insurance scheme and there is scarce evidence of the impact of the employment-based health insurance targeting the population of productive age who represent Egypt's workforce and the country's main human resource.

The study aimed to evaluate the impact of the employment-based scheme on health system accessibility and financing, through 3 main questions: Does the employment-based approach reach all categories of the population? Does employment-based health insurance meet the beneficiaries' health needs? Is the employment-based health insurance scheme capable of increasing health care service utilization and relieving the financial burden borne by individuals?

## Methods

### Study population

The study made use of the Egypt Social Contract Survey Data from 2005 [5]. The sample was based on the same sampling frame as the Egypt Demographic and Health Survey 2005 [6]. The sample was designed to provide estimates of all major variables at the national and regional level.

Egypt is divided into 5 administrative regions covering 21 governorates (administrative geographic units). The administrative regions include the urban governorates (Cairo, Alexandria and Suez), urban Lower Egypt, rural Lower Egypt, urban Upper Egypt and

rural Upper Egypt. There were 15 060 individuals in the productive age groups. Most of the records (95.3%) had complete information on the health insurance coverage and were used for the analysis.

### Data and variables

The survey data included sociodemographic information, insurance coverage details, health service utilization in the 12 months prior to data collection and total family expenditure and out-of-pocket expenditure on regular treatment and last health care service use within the 12 months prior to data collection. The analysis was restricted to the population in the productive ages: > 18 years (upper age limit for school health insurance) and < 60 years (lower age limit for pension health insurance). This age range was used to enable comparison between the groups with and without employment-based health insurance and in order to demonstrate the impact of the employment-based scheme.

### Analysis

The data were weighed to give estimates that were representative of the population from which the sample was drawn. In all analyses, the employment-based health insurance was compared with other health insurance schemes among the working and non-working population, as well as with the non-insured population to represent the employment-based health insurance effect. The chi-squared test was used to detect significant difference between proportions, *t*-test was used to detect significant difference between 2 means and Kruskal–Wallis test for more than 2 means.

The impact of the health insurance coverage on increasing health care service utilization and reducing the financial burden borne by individuals was measured by 2 methods. The first method assessed the difference in the catastrophic payment head count and the out-of-pocket catastrophic payment

excess between the employment-based scheme and the other schemes or in the absence of health insurance coverage. The “catastrophic” label refers to the fact that falling ill can induce a sizeable, unpredictable shock to an individual’s living standard. The catastrophic payment head count (defined as 20% of the total expenditure [7]) is a straightforward way to measure the fraction of individuals whose health care costs exceed the threshold, thus indicating the magnitude of catastrophic payments in a population. The out-of-pocket catastrophic payment excess (calculated by subtracting 20% from the health spending fraction for those with catastrophic payments) captures the average degree by which payments exceed the threshold, thus measuring the intensity of catastrophic payment in a population.

The second method involved a 2-part model [8–10]. Part 1 was a logit model estimating the individual’s probability of using health care services. Part 2 was a log–linear model that estimated the annual per capita health expenditure incurred by an individual when using the health care services. As the employment-based scheme did not show significant interactions with the other independent variables, interaction terms were not included in the model.

STATA, version 9, computer package was used for data analysis.

## Results

### Characteristics of the study sample

A total of 14 359 individuals in the productive age range (between 19 and 59 years) were included in the study. The working population accounted for 46.1%. The majority of the non-working population (78.5%) were females, most of them (68.3%) housewives. The overall health insurance coverage was low, with just 22.8% of the population of productive age being covered. A higher

proportion of the working population were covered by an insurance scheme (39.3%), mostly (95.0%) employment-based. On the other hand, just 8.7% of the non-working population were covered. Table 1 shows the background characteristics of the study sample.

### Health insurance coverage

At national level, 37.5% of the working population were covered by an employment-based scheme and only 1.8% of them had another form of health insurance coverage (Table 2). The population in urban regions benefited more than those in rural regions from health insurance. There was also a clear

increasing trend in the proportion of the health insurance beneficiaries by age group among the working population for both the employment-based and the other schemes. However, the non-working population had the highest proportion covered at the 2 age extremes, especially those  $\leq 29$  years, as the health insurance coverage in this age group was influenced by the school health insurance effect. Working females benefited more from health insurance coverage, whether employment-based or other schemes, than did working males. For the non-working population, the share of females with health insurance coverage was low compared

**Table 1** Background characteristics of individuals in the productive age, Social Contract Survey, Egypt 2005

Variable	Total (n = 14 359)	Working population (n = 6626)	Non-working population (n = 7733)
<b>Region<sup>a</sup></b>			
Urban governorates <sup>b</sup>	28.2	29.1	27.5
Urban lower Egypt	10.1	11.2	9.2
Rural lower Egypt	32.9	32.1	33.6
Urban upper Egypt	7.0	7.1	6.8
Rural upper Egypt	21.8	20.4	22.9
<b>Age (years)<sup>a</sup></b>			
$\leq 29$	40.7	28.6	51.1
30–39	21.6	25.5	18.2
40–49	20.8	25.8	16.5
50–59	16.9	20.0	14.1
<b>Sex<sup>a</sup></b>			
Male	49.9	83.1	21.5
Female	50.1	16.9	78.5
<b>Wealth quintiles<sup>a</sup></b>			
Q1 (poorest)	17.2	16.0	18.2
Q2	19.0	17.4	20.4
Q3	20.0	19.6	20.3
Q4	21.4	20.5	22.1
Q5 (richest)	22.4	26.4	18.9
<b>Health insurance scheme<sup>a</sup></b>			
None	77.2	60.7	91.3
Employment-based	17.3	37.5	0.0
Private	0.3	0.5	0.2
Other <sup>c</sup>	5.2	1.3	8.5

<sup>a</sup>P < 0.001.

<sup>b</sup>Cairo, Alexandria and Suez.

<sup>c</sup>Through Ministry of Health and Population, syndicates, school or a family member.

**Table 2 Health insurance coverage by individuals' work status and type of insurance scheme, Social Contract Survey, Egypt 2005**

Variable	Health insurance coverage		
	Working population		Non-working population
	Employment-based	Other schemes	Other schemes
	%	%	%
<b>National<sup>a</sup></b>	37.5	1.8	8.7
<b>Region<sup>a</sup></b>			
Urban governorates	38.7	3.1	8.8
Urban Lower Egypt	56.0	2.0	16.0
Rural Lower Egypt	37.4	1.0	8.7
Urban Upper Egypt	46.8	1.9	8.5
Rural Upper Egypt	22.7	0.8	5.6
<b>Age (years)<sup>a</sup></b>			
≤ 29	16.5	1.3	14.1
30–39	36.8	1.5	1.8
40–49	50.4	1.8	2.7
50–59	51.9	2.9	4.8
<b>Sex<sup>a</sup></b>			
Male	33.5	1.5	20.1
Female	57.5	3.4	5.6
<b>Wealth quintile<sup>a</sup></b>			
Q1 (poorest)	13.2	0.5	4.3
Q2	23.0	1.5	6.1
Q3	31.8	1.5	7.1
Q4	44.7	1.9	10.1
Q5 (richest)	60.5	2.9	15.8

<sup>a</sup>*P* < 0.001.

with the non-working males or working females. The employment-based health insurance, as for the other insurance schemes, did not solve the problem of the lower wealth quintiles. There was a clear benefit from the health insurance coverage in favour of the wealthiest quintiles.

### Health insurance utilization

At national level, it was estimated that only 41.3% of all health insurance beneficiaries used the scheme when purchasing health care. Among the working population, 43.5% of those with employment-based insurance used the scheme when purchasing health care services compared with 44.6% of beneficiaries of other scheme and 32.9%

of the non-working population with health insurance coverage (Table 3). Employment-based insurance was utilized more by the working population in the urban governorates and Lower Egypt than in Upper Egypt. There was still a gap in health insurance utilization favouring the urban regions in both Lower Egypt and Upper Egypt. Health insurance utilization among the non-working population was less than the employment-based scheme utilization in all regions. The employment-based scheme, as well as the other schemes, was used more by the older age groups (40+ years).

There was no significant difference in health insurance utilization between

males and females or among wealth quintiles.

### Health service utilization and financial burden

It was estimated that 11.6% of the individuals in the productive age group were subject to catastrophic payments, with a mean percentage of excess payment of 15.1% above the threshold (20% of total expenditure). At national level, the insurance schemes other than the employment-based ones appeared to be dominant in reducing the proportion of individuals subject to catastrophic payment, while the employment-based scheme was dominant in reducing the excess out-of-pocket catastrophic payment (Table 4). As for the other schemes, the employment-based insurance was able to reduce the financial burden of health care in the urban governorates and for the younger age groups.

It was estimated that 23.9% of the sample used the health services during the 12 months prior to data collection. Around 94.2% of the service users reported regular purchase of medicine for chronic illnesses, 15.1% reported needing inpatient care and 89.7% reported outpatient care. The median annual per capita out-of-pocket expenditure on medicines for chronic illnesses and a single inpatient and/or a single outpatient health care service use was 225 Egyptian pounds (LE) (US\$ 1 was equivalent to around 6 LE at the time of data collection).

Table 5 shows the results of the 2-part model; the coefficients in the logit model were transferred into odds ratios to facilitate interpretation. The employment-based scheme did not significantly increase health service utilization; however, it significantly reduced the out-of-pocket expenditure on health care services (*P* = 0.031). The other health insurance schemes reduced the health service utilization (*P* = 0.044) but had no impact on reducing out-of-pocket expenditure on health.

**Table 3 Health insurance utilization among beneficiaries by individuals' work status and type of insurance scheme, Social Contract Survey, Egypt 2005**

Variable	Health insurance utilization		
	Working population		Non-working population
	Employment-based	Other schemes	Other schemes
	%	%	%
<b>National<sup>a</sup></b>	43.5	44.6	32.9
<b>Region<sup>b</sup></b>			
Urban governorates	54.7	44.8	42.9
Urban Lower Egypt	45.1	53.3	34.2
Rural Lower Egypt	42.6	52.4	30.8
Urban Upper Egypt	29.4	22.2	28.9
Rural Upper Egypt	26.6	22.2	19.2
<b>Age (years)<sup>c</sup></b>			
≤ 29	35.4	36.4	28.7
30–39	35.1	47.8	20.8
40–49	44.2	40.0	64.7
50–59	53.9	52.6	63.5
<b>Sex</b>			
Male	44.0	45.3	30.1
Female	42.1	43.2	35.5
<b>Wealth quintile</b>			
Q1 (poorest)	37.1	66.7	29.5
Q2	44.5	53.3	34.7
Q3	40.4	52.6	29.5
Q4	45.5	41.7	31.2
Q5 (richest)	44.1	40.0	35.5

<sup>a</sup> $P < 0.001$ .

<sup>b</sup>Employment-based  $P < 0.001$ ; non-working population  $P = 0.002$ .

<sup>c</sup>Employment-based  $P < 0.001$ ; non-working population  $P < 0.001$ .

The model also showed that as age increased, service utilization increased significantly ( $P < 0.001$ ), with no difference between age groups regarding out-of-pocket expenditure. Females and the lowest 3 wealth quintiles showed a significant increase in health service utilization ( $P < 0.001$ ) compared with the other groups, and again with no significant difference in the annual out-of-pocket expenditure on health care.

## Discussion

Implementing social health insurance in a nation is a laudable goal and it takes a considerable degree of political will

to extend coverage to all population groups, including the poorest. The countries that operate such a system have spent from 25 to over 100 years to reach universal coverage and risk sharing [11–13].

Until now, the dominant health insurance system in Egypt targeting the productive population was the employment-based scheme. The primary objective of expanding health insurance coverage to employees was to improve their access to health care services and reduce inequitable access for the workforce. Then the objective became more optimistic: to expand the health insurance coverage to the employees' families to reach the unidentifiable portion of

the population that may be working in the informal sector or unemployed. Targeting this sector of the population is an easy way to reach a well-defined population of the workforce through their work place. Our results showed that only 22.8% of the population in the productive ages benefited from a health insurance scheme. This was nearly half the national level reported by the MOHP [14]. The difference in the proportion of health insurance coverage between the results of this study and the MOHP estimates could be explained by the influence of the school health insurance that was reported to cover 61% of children between 6 and 18 years [15].

The low health insurance coverage could be partly explained by a lack of awareness of non-obligatory health insurance schemes, as reflected in the low proportion of individuals reporting schemes other than the employment-based and the school health insurance. It could be also due to the limited family resources in a low-income country such as Egypt. Limited resources mean that people do not think beyond their current situation even if they are aware of the benefits of an insurance scheme. These 2 factors mean that people, especially those in good health, may judge the health insurance contributions to be too expensive and choose not to insure. However, the obligatory employment-based scheme was still unable to cover the majority of the working population as only 37.5% benefited from it.

Probably as a result of the higher likelihood of working in the formal sector, higher proportions of the working population were covered in urban areas, older age groups, among females and among the wealthier. Given the high proportion of the population who are not working in Egypt, in addition to those working in the informal sector, there is always a risk that some families, especially the disadvantaged, would have both the male and female partners falling into one of these groups. Thus the employment-based approach

**Table 4 Financial burden of health service utilization by individuals' work status, Social Contract Survey, Egypt 2005**

Variable	Financial burden of health service utilization					
	Employment-based		Other schemes		Non-beneficiaries	
	Catastrophic payment	Excess payment	Catastrophic payment	Excess payment	Catastrophic payment	Excess payment
	%	Mean %	%	Mean %	%	Mean %
<b>National<sup>a</sup></b>	11.1	10.9	7.7	12.3	12.0	16.2
<b>Region<sup>b</sup></b>						
Urban governorates	6.7	5.2	9.3	12.3	9.3	7.5
Urban Lower Egypt	10.8	7.3	8.1	5.4	15.8	18.5
Rural Lower Egypt	14.5	16.1	5.6	20.1	13.1	18.1
Urban Upper Egypt	13.2	12.4	11.1	4.8	13.6	19.1
Rural Upper Egypt	11.8	15.4	7.3	6.2	12.0	22.1
<b>Age (years)<sup>c</sup></b>						
≤ 29	5.8	6.9	3.6	4.6	5.3	8.7
30–39	6.7	7.8	11.5	18.1	11.0	17.0
40–49	11.8	12.9	14.1	35.0	18.4	19.8
50–59	16.4	13.1	26.7	42.3	25.9	33.3
<b>Sex</b>						
Male	10.6	11.0	6.1	16.1	9.7	16.4
Female	12.6	10.7	9.3	8.2	13.9	16.0
<b>Wealth quintiles</b>						
Q1 (poorest)	17.4	42.2	7.7	29.0	13.1	16.8
Q2	10.9	21.4	9.8	20.9	12.0	23.7
Q3	12.5	8.4	10.8	19.6	12.5	16.1
Q4	10.6	8.5	7.7	9.0	11.7	13.1
Q5 (richest)	10.0	7.0	5.4	3.8	10.6	10.0

<sup>a</sup>Catastrophic payment  $P < 0.001$ ; excess payment  $P < 0.001$ .

<sup>b</sup>Employment-based, catastrophic and excess payment  $P < 0.001$ ; non-beneficiaries, catastrophic and excess payment  $P < 0.001$ .

<sup>c</sup>Employment-based, catastrophic and excess payment  $P < 0.001$ ; other schemes, catastrophic and excess payment  $P < 0.001$ ; non-beneficiaries, catastrophic and excess payment  $P < 0.001$ .

**Table 5 Two-part model representing the probability of health service utilization and the incurred level of the annual per capita health expenditure by health service users, Social Contract Survey, Egypt 2005**

Variable	Probability of health service utilization			Conditional expenditure: log-linear model	
	OR	95% CI	P-value	Coefficient	P-value
Employment-based insurance	1.02	0.95–1.10	0.508	-2.16	0.031
Other insurance scheme	0.89	0.79–1.00	0.044	0.68	0.498
Rural area	1.04	0.99–1.10	0.133	0.32	0.751
Age ≤ 29 years	0.39	0.37–0.42	< 0.001	-0.24	0.812
Age 30–39 years	0.54	0.50–0.58	< 0.001	-0.30	0.764
Age 40–49 years	0.77	0.72–0.82	< 0.001	-0.27	0.784
Female	1.20	1.14–1.26	< 0.001	-0.44	0.657
Wealth quintile 1 (poorest)	1.21	1.11–1.31	< 0.001	-0.87	0.382
Wealth quintile 2	1.20	1.10–1.30	< 0.001	-0.59	0.556
Wealth quintile 3	1.18	1.09–1.27	< 0.001	-0.65	0.513
Wealth quintile 4	1.05	0.97–1.14	0.210	-0.33	0.745

OR = odds ratio; CI = confidence interval.

will always be problematic in reaching these categories of the population and their families, with resulting disparities in health insurance coverage. Consequently, it is expected that even with the expansion of the employment-based approach, coverage will be always skewed towards the most favoured population, in addition to the fact that universal coverage will be difficult to achieve.

The results of this study have shown that health insurance coverage did not meet the health needs of all beneficiaries. Given that the health insurance coverage was 22.8% and just 41.3% of the beneficiaries utilized the schemes in purchasing health care, this means that the schemes met the health needs of just 9.4% of the productive population. The employment-based scheme was more prevalent, covering 37.5% of the working population, but just 43.5% of those insured used the scheme in purchasing health care, thus the actual benefit from this scheme was estimated to be 16.3% of the working population. The urban skew in the employment-based scheme coverage was reflected in its utilization.

The fact that the system was not responsive to the health needs of all beneficiaries may be also influenced by the cost ceiling that may be too low to cope with the cost of the advancements in medical practice and the new technologies used to cure illnesses. Previous experience has also shown that health insurance systems in some countries suffer from non-compliance of health care providers, who prefer to charge the medical care costs directly in order to secure their payments [16].

The skew towards older ages in the employment-based scheme was also reflected in utilization, as the scheme was overburdened by insured users who were older and would be expected to be medium to high health risk. This adverse selection overloads the cost of health care and may risk sacrificing quality of care or mislead policy-makers into reducing the cost ceiling limit or charging individuals with more contributions.

This study aimed to assess the utilization of health services and the financial burden borne by individuals using the health services. However, the inpatient and outpatient utilization and cost may have been underestimated as they refer to the optimal condition of being subject to just one inpatient and/or outpatient event per year. Thus, the results should be interpreted with caution as they do not refer to actual annual health service utilization or per capita out-of-pocket expenditure on health. Although the employment-based scheme was not able to reduce the proportion of people subject to catastrophic payment, which is a reflection of the limited services provided or the unsuitability of the cost ceiling level, it is worth mentioning that the scheme contributed to reducing the excess out-of-pocket catastrophic payment. The employment-based scheme also failed to reduce the magnitude and intensity of catastrophic payment in rural areas and for the older population.

The results of the 2-part model showed that the current employment-based scheme was not effective in increasing health service utilization, but succeeded in reducing out-of-pocket expenditure on health. Health service utilization is a mix of multiple factors that depend on the availability of services, the quality of services and the extra out-of-pocket expenditure on health. Consequently, if services are not available or if their quality does not meet the beneficiaries' expectations, utilization is not expected to increase even in the presence of insurance coverage. Moreover, if the cost ceiling for the scheme is low and does not cover most of the health care expenses, the burden of out-of-pocket expenditure on health borne by beneficiaries will not encourage them to use the services.

This is another concern that calls for examination of the health services provided and the cost ceiling. The model has also confirmed that the health service utilization was overburdened by females, the lowest 3 wealth quintiles

and those aged at least 50 years, the categories expected to be medium to high health risk who benefited from an equal annual out-of-pocket expenditure on health similar to those postulated to be have low health risk.

If social health insurance remains a key health policy goal, Egypt is invited to take well-planned steps towards a workable social health insurance structure. As experience has shown, planning and implementation are expected to take time and the system is anticipated to progress with speed corresponding to the current percentage coverage and the economy of the country until universal coverage is achieved [17]. It is recommended that Egypt works on blending all types of health insurance schemes into a family model in an attempt to progress towards a social health insurance structure. The situation calls for adopting an innovative approach to progress towards universal coverage. There is a need to combine multiple identification sources in an attempt to identify any of the family members and tracking the identified member to cover the whole family in a process such as the network chain referral. This multiple channel approach may reduce the risk of overburdening the system with high health risks and may progress towards the principle of risk sharing.

The most difficult part of developing health insurance is recalculating the cost ceiling to meet the health needs of the country. This needs very cautious assessments of family income, population health needs and the actual cost of health care, taking into consideration family size and structure [17]. Debate may arise that the current contributions are too little to support the system; yet multiple efforts may assist through various fronts. First, risk sharing in the early stages of expansion may help in balancing the expenditure, as the rich will support the poor and the healthy will support the unhealthy. Secondly, widening the focus of the health insurance to include preventive care will reduce

the incidence of diseases and reduce the cost of curative care. A third helping factor would be to redefine the role of the HIO to be similar to its peers worldwide as a purchaser of health services and not a competitor to health service providers. As a purchaser of health services the HIO would relieve itself from the burden of health service provision and could demand that the MOHP ensures the provision of quality health care. The MOHP would charge the HIO with the actual health care fees, which would liberate the MOHP from the obligation of offering free health care and losing

revenue. Consequently, government subsidies could be mobilized gradually from MOHP expenditure to supporting health insurance funding.

Most of all, Egypt needs to develop a culture of health insurance within the country, through health insurance awareness programmes targeting all categories of the population.

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