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THE EFFECTS OF DEMOGRAPHICS AND INSURANCE PLAN CHARACTERISTICS ON MEDICAL CLAIMS IN EMPLOYER - SPONSORED HEALTH INSURANCE

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ABSTRACT

Accelerating health care costs because of technological advances and a higher prevalence of communicable and non-communicable diseases have contributed to the rising costs of providing health care benefits by many employers. This study identified the factors affecting medical claims for hospitalisation under employer-sponsored health insurance (ESHI) plans where the premiums are partly sponsored by the employer. Data were extracted from one of the government statutory bodies in Malaysia that provides private health insurance coverage to its employees. The research is novel for the fact that government employees are eligible for almost free health care benefits at public health institutions, but the institution in this study offers private health insurance. We use the two-part model (TPM) to identify factors that affect the probability of filing at least one claim and also to identify the determinants of total expenditure incurred during the period under study. The results reveal that marital status, age, type of plan, and premium level are significant factors that determine the probability of claiming, while age and gender significantly influenced the amount of claims. Therefore, understanding the design of health benefits and the composition of employees and their expenditures on health care is a continuous process in ensuring that the health benefits program is not only appropriate but also sustainable. The implications of the study extend beyond the local context, offering valuable lessons for employers, insurance providers, and policymakers worldwide in balancing cost efficiency with employee well-being.

INTRODUCTION

Employer-sponsored health insurance (ESHI) is a primary source of healthcare coverage for millions of working individuals and their families, particularly in countries where healthcare financing is largely based on private health insurance, such as in the United States (Sen, 2022). However, in some countries, including Malaysia, employer contributions can also be part of public healthcare financing or mandatory public insurance systems. ESHI forms an essential part of an employee benefits program, enabling employers to pay medical expenses under a single master contract. To finance the group health insurance plan, employers may ask employees to share the cost by contributing partially to the premium (contributory plan). Despite this, employees still benefit from a lower premium compared to purchasing coverage directly from a private insurer. Group health benefits provide significant advantages for employees, including improved access to healthcare, reduced out-of-pocket expenses, and enhanced overall well-being. For employers, these benefits can lead to lower absenteeism, fewer sick hours, and increased employee productivity. However, rising health insurance premiums can place a financial strain on employers, potentially increasing overall compensation costs (Reshmi & Mulla, 2023).

By subsidising health insurance, employers help reduce the financial burden on employees, ensuring that they and their families can access necessary medical services. This leads to improved health outcomes in the workforce, as studies show that individuals with insurance are more likely to receive preventive care, manage chronic conditions effectively, and maintain better overall health (Basu et al., 2020). Moreover, ESHI functions as a valuable recruitment and retention tool, enhancing an employer's competitive advantage in the job market (Reshmi & Mulla, 2023). Companies that offer comprehensive health insurance plans are more likely to attract and retain high-quality talent, which can translate into higher productivity and lower turnover rates.

PROBLEM STATEMENT

Despite the benefits to both employers and employees, some studies suggest that adverse selection and moral hazard problems are more prevalent in group health insurance, resulting in higher overall insurance costs. In a group health insurance setting, employees can choose among health insurance plans with varying benefits. When selecting the benefit plans, employees are assumed to choose those that maximize their utility. Therefore, factors like income, the amount of premium contribution, and risk types often influence employees' choice of health plan. Studies by Spinnewijn (2017) and Brahmana et al. (2018) have found that individuals purchase insurance only when the revealed value for insurance, reflecting their insurance demand, is greater than or equal to the price of the contract.

Thus, employees may choose to enroll in a voluntary health insurance plan or opt for a higher premium plan in anticipation of higher healthcare costs for the year. Previous studies on health insurance in Malaysia mostly focused on individual health insurance (Abdul Rahman & Mohd Daud, 2010; Abu Bakar and Samsudin, 2016; Samsudin et al., 2016; Kefeli & Jones, 2012; Balqis-Ali et al., 2023). Studies on group health insurance in Malaysia are limited, except for Abu Bakar et al. (2002) and Lim and Ahmad (2015), which published teaching cases on group health insurance.

RESEARCH OBJECTIVE

The primary objective of this study is to examine how income levels, demographic factors, and health plan selection influence inpatient medical claims within the context of employer-sponsored group health insurance in Malaysia. Specifically, the study aims to:

1. Examine the distribution of income levels, demographic factors, and health plan selection in relation to medical claims status.
2. Analyse the effect of income, demographic characteristics (age, gender, marital status), work status, insurance category and level on inpatient claim behaviour and amount.

By understanding the determinants of claim behaviour in employer-sponsored schemes, this research will offer practical recommendations for optimizing employee benefits and controlling healthcare costs.

LITERATURE REVIEW

The association between health insurance ownership and the utilisation of healthcare services has been widely researched, specifically for individual private insurance. Previous studies suggest that health insurance can induce moral hazard problems, which result in an inefficient reallocation of resources (Balqis-Ali et al., 2023; Powell and Goldman, 2021; Einav & Finkelstein, 2018; Ehrlich & Becker, 1972; Savage and Wright, 2003). Moral hazard reflects the increase in healthcare use due to the reduction of out-of-pocket payments. Thus, individuals may have less motivation to practice healthy lifestyles knowing that they are covered by health insurance (Balqis-Ali et al., 2023; Ehrlich & Becker, 1972). This behaviour disrupts the flow of shifting funding from healthy users to non-healthy ones, defeating the fundamental concept of insurance to spread the risks. However, this may not necessarily be the case, as there are many competing views on this matter.

A review of selected papers by Einav and Finkelstein (2018) showed that insurance ownership may increase, decrease, or not change healthcare spending. When deciding on health insurance plans, employees are assumed to select a plan that maximizes their utility. Previous studies concluded that plan category is a significant variable affecting healthcare utilisation (Hae et al., 2014; Cai et al., 2019; Goldstein & Wharam, 2022). Besides insurance ownership, other important factors may also determine utilisation, including age, gender, and income (Alipio and Pregoner, 2020; Ukert et al., 2022; Sherman et al., 2022). In addition, Alipio and Pregoner (2020) also found that the impact of family size, lifestyle factors, and geographical area are significant determinants of healthcare utilisation in the Philippines. The effects of age and gender on healthcare utilisation are mixed. The anticipation of future expenses may also prompt policyholders to switch insurance plans that offer them greater protection. Plan switching, if allowed, may take place due to changes in many factors and anticipation of future health spending. Subject to the insurance contract, employees might switch to a plan that they think might benefit them the most. In our study, plan switching is directly linked to the process of selecting an insurance plan. Policyholders may change plans every year without being based on claims from previous years. People who switched to a less generous plan have lower medical spending than the group average, while those who moved to a more generous plan appear to anticipate higher spending than the average (Tchernis & Gaccione, 2006; Powell & Goldman, 2021; Ukert et al., 2022). Switching behaviour from choosing a less to a more generous plan may contribute to the adverse selection problem. People who tend to purchase health insurance are those who are most likely to incur health expenditure or those in the high-risk category (Tchernis & Gaccione, 2006; Cardon, 2020). This eventually will increase future premium prices and drive out the low-risk from the insurance market (Akerlof, 1970).

Although studies suggest that the welfare costs of adverse selection are low (Bundorf et al., 2012; Cohen & Einav, 2007; Einav et al., 2010), evidence within an employer-sponsored group health insurance program is crucial for the program to be sustainable, especially for those without health screening. In other circumstances, demand can possibly be higher among the low-risk groups, suggesting advantageous selection. Unlike adverse selection, advantageous selection is more propitious to the market. Fang et al. (2008) found that income, education, longevity expectations, financial planning horizons, and cognitive ability are among important factors for this behaviour. Based on Malaysian national data, Samsudin et al. (2016) found that age, not gender, significantly increases the likelihood and frequency of hospitalization. Other studies have found that gender does matter, with mixed findings (Adamson et al. 2003; Cumming et al. 2010; Onah & Horton, 2018; Cai et al., 2019). Income is another enabling variable for healthcare utilisation. It was found to be significant in many studies, including studies that were based on the tax-financed system, like in the UK and Italy. Among studies that found the negative effects of income are Atella et al. (2004), Ersbland et al. (1995), Lourenco and Ferreira (2005), and Sarma and Simpson (2006), while its positive effects are found in Bagod'Uva (2005) and Maden et al. (2005).

Previous studies have explored the association between health insurance ownership and healthcare utilisation, highlighting the potential for moral hazard problems. While some findings suggest that health insurance can induce inefficient resource allocation, the impact varies, and factors such as plan

category, demographic variables, and plan switching behaviours play significant roles in determining healthcare utilisation. However, we discovered that empirical evidence based on employer-sponsored insurance is limited, particularly within the Malaysian framework. Therefore, this study is important to fill this gap in the literature.

METHODOLOGY

Data

We used 2014/2015 health insurance claims data in this cross-sectional study. We acknowledge that the use of older data may limit the generalisability of our findings to current healthcare behaviours but we believe that the fundamental patterns of healthcare-seeking behaviour and the structure of the insurance scheme have remained relatively stable over time, making the data appropriate for our illustrative and exploratory analysis. Total inpatient claims were extracted from the Health Insurance Company Claim Report and matched with employee demographic information from the employer's internal database. The claims reflect the total amounts submitted, irrespective of the final amount paid by the insurer. We used the original claim amounts to avoid introducing bias related to differences in insurance coverage or reimbursement rates.

In this institution, employees were given a choice of four health plans with different levels of premium and could choose between four categories: employee-only plan (EO), employee and spouse (ES), employee and children (EC), and employee and family (EF). The employer subsidised up to RM300 annually towards premium contributions per employee. Those who did not make a selection were assigned a default plan, which is the Plan 90 and Employee Only (EO) plan. The type of plan and limit are depicted in Table 1.

Table 1: Summary of the Group Health Insurance Plan in the Study

Plan Category	Employee only (EO)	Employee & Spouse (ES)	Employee & Children (EC)	Employee & Family (EF)	Plan Limit
Plan 90	RM 200.00	RM 312.00	RM 572.00	RM 838.00	RM 20,000.00 yearly (Room RM 90.00)
Plan 150	RM 220.00	RM 337.00	RM 622.00	RM 918.00	RM 30,000.00 yearly (Room RM 150.00)
Plan 250	RM 344.00	RM 502.00	RM 932.00	RM 1,416.00	RM 40,000.00 yearly (Room RM 250.00)
Plan 250b	RM 407.00	RM 596.00	RM 1,089.00	RM 1,666.00	RM 60,000.00 yearly (Room RM 250.00

The data were observed from June 30, 2014, to April 27, 2015 and after some exclusions, the final dataset contained 3,332 employee observations. The data revealed that only 255 staff members (7.65%) submitted at least one claim. Based on the data, the maximum total claim amount was RM86,703.50, with a mean of RM662.58, and the age of employees ranged from 20 to 75 years. The definition of data used in the empirical analysis is shown in Table 2, while Figure 1 shows the distribution of categorical explanatory variables. Figure 1 shows that the majority are married and are permanent staff. The distribution of gender is quite balanced. Under the plan category, 60.65 percent chose the 'employee only (EO)' plan, while the 'employee-family (EF)' plan comes in second with 20.95 percent. Though the number of staff in the EF plan is lower than that of EO, the majority of claimants (46.67%) come from the EF category. This is as expected, as EF allows expenditures incurred by spouses and children. Although most of the employees chose the low-plan level, there are more claimants from the high-plan level.

Table 2: Definition of the variables.

Variables	Variable name	Definition
Dependent variable		
Claim (First-part)	*claim*	=1 if a claim was made from insurance company
Amount (Second-part)	*amount*	Total claim (RM) incurred from insurance company report
Explanatory variable		
Marital status*	*married*	= 1 if married, 0 otherwise
Age*	*Age*	Age of staff in years
Income*	*income*	Log of income in RM
Gender*	*Male*	= 1 if male, 0 female
Employment status*	*permanent*	= 1 if permanent, 0 otherwise
Plan Category	*EO (reference category)*	=1 If choose employee onlyplan
	EC	= 1 if choose employee and children plan, 0 otherwise
	ES	= 1 if choose employee and spouse, 0 otherwise
	EF	= 1 if choose employee and family plan, 0 otherwise
Planlevel	*High*	= 1 if choose high premium plan (Plan250), 0 otherwise

*Demographic indicators were measured at staff level.

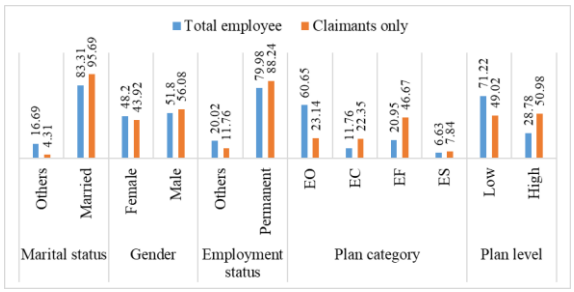

Figure 1: Distribution of explanatory variables (%)

Empirical specification – Two-Part Model (TPM)

A two-part model was used to process a combination of discrete and continuous outcomes. It is deemed suitable for dealing with dependent variables with a large number of zero values, which, in this case, stood at 92.35 percent. In our model, the first part measures the probability of claiming by utilizing inpatient care, while the second part measures the amount of the claim. The Heckman Selection Model (Heckman 1977) is an alternative to the two-part model. It helps to correct bias due to non-randomly selected samples that truncate the outcome variable. While zero outcomes in Heckman indicate censored values of the positive outcome, the zeroes in TPM are the real ones. Differences between the two models have been discussed in earlier studies (Manning et al., 1987; Leung & Yu, 1996; Dow & Norton, 2003). By using Heckman's model, we found no evidence of a selectivity problem in the sample. It thus justifies the use of the two-part model in this study. Besides, the TPM does not have any assumptions about the correlation between the first (binary) and second (continuous) equations. The model is specified based on the work of Belotti et al. (2015).

The model for the probability of positive outcome (first part) is as shown below:

$$\phi(y \succ 0) = \Pr(y \succ 0|\mathbf{x}) = F(\mathbf{x}\boldsymbol{\delta}) \qquad [1]$$

where $\mathbf{x}$ is a vector of explanatory variables, $\boldsymbol{\delta}$ is the vector of parameters to be estimated and F is the cumulative distribution function of the standard normal distribution. The explanatory variables in [1] are marital status, employment status, gender, income, insurance plan category and plan level.

In the second part, the model fits the positive outcomes as

$$\phi(y|y \succ 0, \mathbf{x}) = g(\mathbf{x}\boldsymbol{\gamma}) \qquad [2]$$

where $\mathbf{x}$ is a vector of explanatory variables, γ is the corresponding vector of parameters to be estimated and g is the density function for $y|y \succ 0$. The positives in [2] are modelled using a generalised linear model (GLM). We use the same explanatory variables as in [1] except for employment status. Thus, the overall mean can be written as the product of expectations from the first and second parts of the model as follows:

$$E(y|\mathbf{x}) = \Pr(y \succ 0|\mathbf{x}) \times E(y|y \succ 0, \mathbf{x}) \qquad [3]$$

The prediction of y_i, $(\hat{y}_i \mid x_i)$ is obtained by multiplying predictions from each model, for each staff, which gives

$$\hat{y}_i \mid x_i = (\hat{p}_i \mid x_i)\, \mathrm{x}\, (\hat{y}_i \mid y_i > 0, x_i) \qquad [4]$$

The models were estimated using STATA 12 with the robust variance estimates.

FINDINGS AND DISCUSSION

Prior to the discussions of the two-part model, we tested whether there was any significant difference between categorical variables, and whether or not a claim has been made. The *Chi-square test* shows that there is significant difference of claim behaviours for marital status, employment status, plan category, and plan choice as shown in Table 3. This finding can be further tested in identifying the effect of each variable by using the two-part model.[1]

Table 3: Distribution of categorical variables versus claim status

	Claim Status		
	No (%)	Yes (%)	Total
Marital status			
single, divorced	545 (98.02)	11 (1.98)	556
Married	2,532 (91.21)	244 (8.79)	2,776
Pearson chi(1) = 30.41 Pr=0.000			
Employment status			
Temporary, contract	637 (95.50)	30 (4.50)	667
Permanent	2,440 (91.55)	225 (8.45)	2,665
Pearson chi(1) = 11.75 Pr=0.001			
Gender			
Female	1,494 (93.03)	112 (6.97)	1,606
Male	1,583 (91.71)	143 (8.29)	1,726
Pearson chi(1) = 2.02 Pr=0.155			
Plan category			
Employee only (EO)	1,962 (97.08)	59 (2.92)	2,021
Employee and children (EC)	335 (85.46)	57 (14.54)	392
Employee and spouse (ES)	201 (90.95)	20 (9.05)	221
Employee and family (EF)	579 (82.95)	119 (17.05)	698
Pearson chi(3) = 178.19 Pr=0.000			
Plan level			
Low	2,248 (94.73)	125 (5.27)	2,373
High	829 (86.44)	130 (13.56)	959
Pearson chi(1) = 66.39 Pr=0.000			

[1] The limitation of this study is that we were not able to control the level of health status of the patients. Thus, we associate the significant effects with possible expectations of their health status.

As for income and age, the two-sample *t-test* shows that there is no mean difference for income but not age, as the mean age for claimants is significantly higher.

Two-part model (TPM)

Table 4 shows the output from the two-part model together with its average marginal effect for the combined probit and GLM specifications.

Table 4: Two-part model

	First-part (PROBIT)		Second part-(GLM)		Marginal Effect	
	coef.	p-value	coef.	p-value	coef.	p-value
married	0.357	0.011**	-79.163	0.978	378.152	0.156
permanent	0.145	0.162	-	-	155.859	0.165
age	0.010	0.052**	315.872	0.001***	34.685	0.000***
male	-0.028	0.696	2917.596	0.004***	192.877	0.080
income	-0.119	0.064	-1813.326	0.123	-266.780	0.020**
EC	0.694	0.000***	-2432.420	0.064	560.379	0.000***
ES	0.304	0.033**	1141.353	0.716	414.732	0.152
EF	0.791	0.000***	938.145	0.513	922.942	0.000***
high	0.443	0.000***	1727.311	0.099	608.993	0.000***
cons	-1.828	0.000***	7780.310	0.392		

The symbols *** and ** denote 1% and 5% levels of significance, respectively

The first part shows the variables that affect the probability to file a claim while the second part identifies the significant variables that determine the total amount of claims made during the survey period. It shows that being married increases the probability to claim. The data also show that 8.79 percent of those married filed at least one claim compared to 1.98 percent among those unmarried. This may be because those who are married have higher chances to file a claim for their family members, provided they purchased the right plan. The role of partner may also be the push factor for health care visits, as some studies also found the significant effect of being married (Deb et al. 2006; Nandakumar 2000; Kefeli & Jones 2012). However, being married does not influence the total amount of claims. We could suggest that the amount of claims is indeed dependent on the severity of illness determined by medical professionals rather than other factors. At this level, the individual's influence is limited.

Although Table 3 shows that the distribution of claims is significantly different by employment status, the effect after controlling the influence of other variables indicates that employment status – whether permanent or otherwise – is insignificant in determining both probability and the amount of claim. Age, on the other hand, shows significant effects in both parts. It indicates that as age increases, the probability and number of claims also increases. Since we are not able to control the influence of health status in this study, the finding may suggest that older people may possibly be associated with lower health conditions, thus requires more medical attention. The significant marginal effect of age implies that a one-year increase in age contributes to the increase in expenditure incurred by RM35.

While the result shows that male staff is less likely to file a claim compared to females, the effect is not significant. Gender shows no significant role in the first-part but is significant in determining the amount of claim. The amount of claims made by male staff is more than that of females. This may be because men have a higher tendency to delay visit to health facilities, hence resulting in greater care and expenditure once admitted (Abdul Rahman and Mohd Daud 2010). From a psychological point of view, women have a higher willingness to visit medical practitioners and share their problems (Mackenzie et al. 2004). This can be the reason why infirmity can be detected earlier, avoiding high expenditure in the case of late entry (Fleishman et al. 2010). However, the implication of our finding is limited as gender is not measured at patient level but represented by the gender of the employees. Furthermore, the marginal effect of the combined model is statistically insignificant.

Income level is insignificant for both parts. However, the average marginal effect of the model shows income (measured as log) is significant at 5 per cent level with a negative direction – suggesting that an increase in income have somehow reduced the amount of total claim. This is consistent with the findings of Atella et al. (2014), Ersbland et al. (1995), Lourenco and Ferreira (2005), and Sarma and Simpson (2006).

Two variables representing insurance characteristics show important roles in determining the probability to claim. Those who chose *EC*, *ES* and *EF* have a higher probability to claim at least once compared to those in the basic employee category - *EO*. Although plan selection does not determine the amount of claim, the marginal effects of TPM for *EC* and *EF* are significant at 1 percent level. Staff with *EC* or *EF* plan spends more than those with the basic *EO* plan by about RM560 and RM923, respectively.

The level of premiums paid distinguishes the benefits obtained in each claim episode. In the theory of adverse selection, those in the high-risk group are more likely to purchase insurance knowing that they might need protection in the future (Abdul Rahman and Mohd Daud 2010; Spinnewijn 2017). From the result, it shows that those who purchase high-premium plans are more likely to claim, but again, it has less roles in determining the amount. The combined average effect shows that those who select the *high* premium option have claimed a higher amount by RM609 than those in the *low* category. This suggests that the problem of adverse selection may exist in a group health insurance setting as purchase is not subject to medical screening. The insurer is not able to exclude high-risk individuals from the pool.

The existence of demand-side moral hazard is difficult to establish from the findings since the short reference period of the study and the policy need to be renewed on a yearly basis. The effect from the change of behaviour is accumulated over time and may require time to be translated into utilisation. Yet, since hospitalisation and its associated costs are largely determined by medical providers based on medical conditions, we believe their behaviours towards admission is crucial. Provider moral-hazard (supplier induced demand) exists when health providers oversupply non-essential care knowing that the patients are covered by insurance (Debpuur et al. 2015). Based on the insignificant effect of premium level in the second-part of TPM, there is no evidence of moral hazard by medical providers. The significant combined (average) effect, however, may suggest that costs incurred are indeed necessary for the treatment.

Post-estimation

The prediction of total expenditure, as specified in [3], is found to be around RM665 per person in the reference period, which is comparable to the actual average of RM663. The influence of age is further tested by estimating the average marginal effect of insurance variables on utilisation at three age levels – 20, 40 and 60 as shown in Table 5. It shows that the marginal effects of plan types (*EC* and *EF*) and premium level (*high*) increase with age. It consistently shows that the expenditure incurred is higher for the older age groups than the younger groups. This finding implies that age is very important in determining the amount of insurance claim. Thus, organisations may expect that group premiums will be higher as staff ages.

Table 5: Marginal effect of insurance variables at age 20, 40 and 60

	Marginal Effect			Marginal Effect	
	coef.	p-value		coef.	p-value
EC			*EF*		
20	-17.848	0.890	20	177.4213	0.244
40	515.545	0.000***	40	866.3265	0.000***
60	1329.018	0.000***	60	1897.3	0.000***
ES			*high*		
20	109.834	0.503	20	163.428	0.069
40	391.7992	0.160	40	575.497	0.000***
60	810.196	0.100	60	1186.552	0.000***

The symbols *** and ** denote 1% and 5% levels of significance, respectively

CONCLUSION

Evidence on employees' healthcare utilisation patterns and subsequent health insurance claims is critical for employers seeking to control rising healthcare costs, which are a growing concern globally. As healthcare expenditures rise, employers worldwide are looking for data-driven strategies to optimise employee benefits while maintaining cost efficiency. This study examines employees' behaviour within a contributory group health insurance plan, providing insights into claim patterns and influencing factors. The findings are valuable in facilitating employers' efforts to design and implement effective policies that enhance health insurance practices and provide insights into managing employee benefit packages. These insights align with global frameworks, such as the World Health Organization's emphasis on Universal Health Coverage (UHC), which promotes equitable access to healthcare services while managing costs sustainably.

Understanding the factors that drive employees' use of hospitalisation claims offers valuable information for both employers and insurance providers. These findings can guide the development of suitable and sustainable health insurance programs tailored to employees' needs. For instance, the study highlights that marital status and gender insignificantly affect the likelihood of making a claim but do influence the claim amount. Conversely, age impacts both claim behaviours. These results are relevant to global insurance underwriting practices, where age and gender are common risk factors in individual health insurance. However, in group health insurance, these variables do not directly contribute to risk stratification. This distinction underscores

the importance of group composition—employers must consider a balanced mix of younger and older employees, as well as gender diversity, to distribute risks effectively within their insurance plans.

Furthermore, the study highlights the importance of proactive healthcare measures, such as regular health screenings and early treatment, to mitigate the risk of escalating healthcare costs. Employers and policymakers can draw parallels to global best practices that advocate preventive healthcare as a cost-control strategy. Initiatives like the OECD's Health Policy Framework stress the role of prevention and early intervention in reducing healthcare expenditures and improving population health outcomes.

A critical finding of this study is the potential for adverse selection in group health insurance due to the absence of medical screening during enrolment. Adverse selection—where individuals with higher health risks are more likely to enrol—poses challenges to the sustainability of insurance pools. While the study finds no evidence of moral hazard (excessive utilisation due to the presence of insurance), addressing adverse selection requires implementing balanced risk control measures. Globally, health insurance schemes often mitigate adverse selection through targeted measures, such as risk pooling and adjusting premiums based on group demographics, ensuring financial sustainability while maintaining equitable access.

Effective management of health insurance benefits offers mutual advantages for employees and employers. Employers benefit from reduced total compensation costs if the value employees place on health insurance exceeds its provision costs. This aligns with the economic principle of total compensation theory, which states that employees' valuation of non-wage benefits can lead to cost efficiencies for employers. Additionally, health insurance serves as a critical tool for enhancing employee satisfaction and retention, contributing to a competitive workforce.

In conclusion, the findings of this research provide meaningful insights for employers and health insurance providers globally. By understanding the nuanced factors that influence claim behavior, such as age, gender, and group composition, employers can design health insurance programs that effectively balance risk, encourage preventive care, and align with broader policy objectives. Such strategies not only support the long-term sustainability of employee benefits but also contribute to the development of more equitable and efficient healthcare systems.

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