Exploring The Medical Burden of Thyroid Tumour Patients Under the Reform of Critical Illness Insurance in China: In the Patient's Subjective Perspective

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Abstract. In late October 2020, the final proposal of the New Definition of Critical Illness Insurance passed the review of the CBRC and thyroid cancer - a cancer with a high incidence rate - became a graded benefit according to its severity. Taking the clinical treatment of thyroid tumours as an example, this paper explores patients' subjective perceptions of the post-reform medical burden through questionnaires and field interviews in collaboration with the Department of Thyroid Surgery of West China Hospital of Sichuan University and using sample data from across China. Based on the impact of the critical illness insurance reform, suggestions are made for optimising the path of reform promotion and building a new pattern of shared medical care among patients, insurance companies and the government.

Keywords: Critical illness insurance reform; thyroid tumours; medical burden; patient subjective perception.

1. Introduction

Nowadays, critical illness insurance has become an important part of China's insurance market, powerfully protecting people's lives and effectively enhancing their sense of well-being and access, and critical illness insurance reform is even more desirable. Based on existing theory and research, this research team relies on the large medical platform of the Thyroid Surgery Department of West China Hospital of Sichuan University to obtain subjective evaluations of patients' medical burden after the reform of critical illness insurance by interviewing both outpatients and inpatients with thyroid tumours, and then quantify and model them objectively to make further recommendations.

2. Review of the literature

Due to the limited number of directly referenced studies and the fact that this topic can be divided into two sub-topics: critical illness insurance reform and comprehensive health care burden, the research team changed its approach to literature review and started from three directions: the nature of critical illness insurance in China, evaluation indicators of health care burden, and the impact of major medical insurance system on health care burden [1], in order to lay a theoretical framework for the subsequent research.

In terms of the nature of critical illness insurance, Lu Li et al. (2019) argue that critical illness insurance (CII) in China is a type of insurance scheme based on the basic medical insurance (BMI) system and designed to further compensate for the high medical costs associated with critical illness.

Secondly, domestic and international scholars have often focused on medical costs, out-of-pocket expenses and reimbursement rates to assess the burden of care. However, most of the research indicators on medical burden by scholars at home and abroad are only at the economic level, and no empirical research has been conducted on additional influences such as social badlands, national policies and psychological burdens.

Finally, different scholars have reached different conclusions on the effect of CII on healthcare burden. Some studies have concluded that CII significantly increased the healthcare expenditure of

residential insurance beneficiaries and that out-of-pocket expenditure increased despite greater financial protection, partly because the implementation of CII also triggered demand for higher healthcare services, e.g. Anqi Li et al. (2019) and Min Yu et al. (2021). While other studies have shown that the financial burden was reduced after the implementation of CII and that households with CII actually improved their ability to resist the financial risks caused by serious illnesses.

In summary, there are flaws in the construction of indicators related to the impact of health insurance on healthcare burden in the existing literatureand the findings are not comprehensive enough in studying healthcare burden only in terms of direct financial burden such as healthcare expenditure or indirect burden such as financial burden of personal illness. Therefore, in this paper, a more comprehensive measure of the effect of critical illness insurance reform on the comprehensive medical burden of urban and rural residents will be used to group whether or not to purchase critical illness insurance, whether or not to understand the critical illness insurance reform, and the type of critical illness insurance benefits purchased [2].

3. Study design

3.1 Theoretical framework

The first and most immediate impact of the 2020 reform of critical illness health insurance is the change in the definition of thyroid tumours in the Code of Practice for the Use of the Definition of Diseases in Critical Illness Insurance, which will henceforth adjust the benefits for this highly prevalent cancer to be graded according to its severity. The change in the definition of disease and the method of payment will have an impact on the reimbursement rate, the willingness to purchase insurance and the expectation of payment, which in turn will have an impact on the overall burden on the patient during the entire medical process. The reimbursement rate refers to the proportion of the total medical costs reimbursed; the expectation of benefits refers to the patient's expectation of purchasing insurance to reduce his or her risk of loss; the patient's overall medical burden includes the financial burden and the subjective burden, where the financial burden is the patient's direct financial expenditure throughout the medical process, while the subjective burden includes the patient's psychological and emotional burden during the medical process The subjective burden includes the psychological and emotional burden of the patient and the impact of the treatment on the patient's family relationships. Specifically, the adjustment of the benefits for thyroid tumours, a highly prevalent cancer, to a graded level of severity will have a direct impact on the proportion of medical expenses paid to patients with different levels of severity and will have a direct impact on the financial burden of patients. This change in expectation will then have a significant impact on the patient's decision to purchase critical illness insurance, and will ultimately be one of the key variables affecting the patient's overall health care burden. In this regard, the following hypotheses are made [3].

H1: Critical illness health insurance reform will affect patients' combined health care burden

H2: Changes in the definition of thyroid tumours will affect patients' reimbursement rates

H3: Changes in definition and reimbursement rates will affect patients' expectations and purchase intentions.

3.2 Data and variables

The data used in this paper were obtained from a questionnaire survey conducted by the Department of Thyroid Surgery at West China Hospital, supplemented by other hospitals in China, and the group successfully developed and published a comprehensive questionnaire on the medical burden of thyroid cancer for patients with thyroid cancer, taking into account existing literature and research. The questionnaire includes several detailed information (as shown in Table 1).

Table 1. Definition of variables

Tier 1 indicators	Tier 2 Indicators	Tertiary indicators
Health care burden of thyroid tumours	Objective financial burden	Out-of-pocket expenditure/annual household income (%)
	Subjective financial burden	Patient Self-Assessment
	Subjective emotional burden	Patient Self-Assessment
Patient's thyroid disease and access to medical care	Type of disease	Papillary thyroid cancer; medullary thyroid cancer; hypoplastic or undifferentiated thyroid cancer
	Severity of illness	Phase I-IV
	Length of time since illness	Number of days (days)
	Main hospital level	County hospitals; urban hospitals; provincial key hospitals; national key hospitals
	Whether there is an acquaintance at the main clinic	Yes/No
	National health insurance reimbursement rates	Medical insurance reimbursement/total cost of treatment (%)
Patient purchase of insurance	Have you purchased a critical illness insurance product	Yes/No
	Premiums to be paid	Annual premium to be paid (¥/year)
	Sum Insured	Amount of claim available if claim conditions are met (¥)
	Amount paid out	Amount of critical illness insurance benefits received as at the date of the survey (¥)
	Approximate time of purchase	Approximate date of purchase of critical illness insurance (date)
	Payout Method	New/old regulations
	Level of knowledge of the reform	Understood/Unknown
Patient Personal Information	Gender	M/F
	Age	Age in years as at the date of the survey (years)
	Type of account	Rural/urban
	Education level	Primary - Postgraduate and above
	Any other chronic illnesses	Yes/No
Patient's family situation	Family size	Total population of the patient's household, including elderly persons in need of support (persons)
	Annual household income	Total annual income in terms of patient's household (¥)
	Number of elderly people	Number of people aged 65+ in households (persons)
	Outpatient visits by family members	Key family members do/do not attend hospital outpatient clinics within two weeks
	The burden of education on family members	Number of children enrolled (persons)
	Hospitalisation of family members	Whether the family member has been hospitalised in the past year
	Family Advanced Hospital Visits	Number of visits by family members to senior hospitals in the past year (Frequency)

4. Data analysis results& In-depth interviews

The sample was divided into a sample of those who purchased critical illness insurance and those who did not, and cross-tabulations were first conducted using whether or not to purchase critical

illness insurance as the independent variable X and the subjective financial burden and subjective psychological burden as the dependent variables Y respectively, with the results shown below.

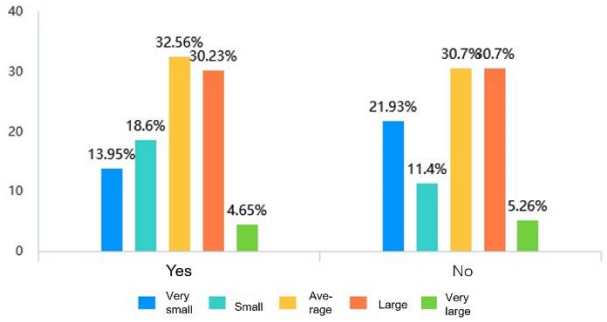

Fig. 1 Relationship between patients' insurance coverage and subjective financial burden

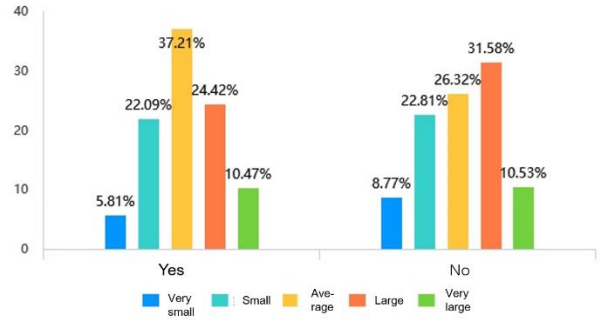

Fig. 2 Patient's insurance coverage and subjective psychological burden

The above graph shows that, in terms of subjective financial burden, there is no significant effect of insurance status on financial burden, but the number of uninsured patients with a high level of subjective financial burden is 0.61 percentage points higher than that of insured patients; in terms of subjective psychological burden, the subjective psychological burden of uninsured patients is more concentrated in larger areas, while the subjective psychological burden of insured patients is almost normally distributed. After in-depth interviews with the sample, the group concluded that the possible reasons for this were that the insured patients had additional financial resources and were more optimistic about the future than the uninsured patients, and therefore had less psychological burden overall.

A further division was made in the sample of critical illness insurance purchases, with the independent variable X being the mode of insurance payment and the dependent variables Y being the subjective financial burden and subjective psychological burden, and the results were cross-tabulated as shown below:

The different types of critical illness insurance payouts have a significant impact on both the perception of subjective financial burden and the perception of subjective psychological burden. In terms of perceived subjective financial burden, the cumulative percentage of those with a 'small' or 'very small' subjective financial burden decreased, while the percentage of those with a 'large' or 'very large' subjective financial burden increased significantly. The percentage of samples with "large" and "very large" subjective financial burden increased significantly.

5. Conclusion and insights

Firstly, it should establish a stable and sustainable funding mechanism, strengthen the construction of a medical assistance mechanism, encourage the development of commercial insurance, medical mutual aid and medical charity, and broaden the scope of funding for medical insurance.

Secondly, comprehensive measures should be taken to reduce patients' out-of-pocket payments. And attempts can be made to explore the possibility of raising the upper limit of health insurance

payments or the upper limit of supplementary reimbursement payments for patients with major diseases.

Lastly, to improve the cost settlement mechanism, in the prevention and control of major diseases, the financial authorities should provide appropriate subsidies for the individual portion of medical expenses for confirmed.

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References

[1] Zafar S Y, Peppercorn J M, Schrag D, et al. The financial toxicity of cancer treatment: a pilot study assessing out‐of‐pocket expenses and the insured cancer patient's experience [J]. The oncologist, 2013, 18 (4): 381-390.Fangfang. Research on power load forecasting based on Improved BP neural network [D]. Harbin Institute of Technology, 2011.

[2] Kankeu H T, Saksena P, Xu K, et al. The financial burden from non-communicable diseases in low-and middle-income countries: a literature review [J]. Health research policy and systems, 2013, 11 (1): 1-12.

[3] Li Y, Wu Q, Xu L, et al. Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implications of universal health insurance [J]. Bulletin of the World Health Organization, 2012, 90: 664-671.