
SOCIAL AND ECONOMIC VALUE: TWO SIDES OF THE SELF-MEDICATION COIN

How consumer education enhances the economic value of self-medication

IS THERE ANY SUBSTITUTION BETWEEN MEDICAL SERVICES AND OVER-THE-COUNTER MEDICATION IN THE CASE OF THE COMMON COLD?

Professor Masako Ii, Yokohama National University, Japan

Associate Professor Masako Ii, Yokohama National University, Faculty of Economics and Associate Professor Yasushi Ohkusa, Osaka University, Institute for Social and Economic Research, together with Masahiro Toriyama, Nomura Research Institute, Ltd and Maki Yoshida, Nomura Research Institute, Ltd examined the choice of health care in Japan for patients suffering from the common cold.

Introduction

Japan's health care system has been relatively successful. Gross health indicators are the best in the world: the infant mortality rate is 0.46 per cent of live births and the life expectancy is 75.9 years for males and 81.8 years for females (World Bank, 1998).

There is universal coverage with virtually unlimited access to all health care facilities. As a ratio of national income in Japan, national medical costs were 7.28 per cent in 1993. This figure is a little more than half of the same ratio in the United States. However, in 1997, national medical costs exceeded 28 trillion yen (about 230 billion US dollars) and continue to rise by at least one trillion yen every year.

There are at least three factors in this expenditure growth. The first factor is the ageing population. The rate at which the Japanese population is ageing is much faster than in other industrial nations. This is expected to contribute to a continued rise in medical care costs.

The second factor is the high utilisation of hospitals. In Japan, there is little functional differentiation between clinics and hospitals, and their boundary is further blurred because a third of the clinics have a small number of beds (the distinction is primarily legal in that facilities with more than 20 beds are designated as hospitals, whereas those having fewer than 20 are called clinics). Neither is there much differentiation between acute and long-term care (Ikegami, 1992). The price of all providers (hospitals and clinics) is uniform, assuming that their quality is the same. However, patients are increasingly turning away from clinics in favour of hospitals because of their perceived higher quality. As a result, there are long queues for outpatients' visits and waiting lists for admissions to hospital. This situation is difficult to reverse because "freedom of choice" is regarded as the cardinal principle in the delivery of health care in Japan.

The third factor is the high per capita costs for medications. Most physicians in clinics do their own dispensing and hospital-based doctors dispense from

the institution's pharmacy. The government sets no limits on the quantity of medications dispensed. Market prices are surveyed periodically by the government and reimbursement prices are accordingly adjusted. However, providers continue to make profits because competition leads to a new round of price-cutting. They maintain that they need this margin to offset the relatively low reimbursement rates for the medical procedures they provide. Therefore, doctors have an incentive to over-prescribe. Patients' medical insurance covers medication costs, giving them a price incentive to favour prescribed products.

The health care reform plan proposes to increase the coinsurance rate for relatively minor illnesses as well as for prescribed medications for these minor illnesses. Minor illnesses are illnesses such as common cold and diarrhoea, which are curable by standard treatment with reasonable cost. Their treatment has a few options besides medical services provided by hospital or clinic. Therefore, the anticipated effect of an increase in the coinsurance rate on national medical costs is not clear. If patients are not sensitive to a price change, an increase in the coinsurance rate may not have an appreciable effect on national costs. On the other hand, if patients are sensitive to a price increase, they may choose other options and decide to seek medical services less frequently. An increase in the coinsurance rate will then decrease the national medical costs.

When patients suffer from minor illnesses, they face three options in this research: they can consult a doctor, purchase over-the-counter (OTC) medications or do nothing. The price sensitivity, therefore, may be relatively high, but this has to be tested empirically (1).

The demand for OTC medications has been analysed since the 1960s (Knapp, 1971; Greenlick and Darsky, 1968). However, it was not until the 1990s that researchers emphasised the savings that governments may make by switching to OTC drugs (Johnson, 1991; McNamee, 1994). In the late 1980s, the British government supported the OTC medicine market by reclassifying certain prescription medicines to allow OTC sales in pharmacies. Eleven medicines were reclassified between 1983 and 1992, and from 1992 to early 1996, 40 more medicines were reclassified (Blenkinsopp and Bradley, 1996).

McNamee (1994) pointed out that in France, if annual OTC sales were to increase by 10 per cent, the saving would be about FF 3-4 billion. In the Netherlands, if 10-15 million visits to the doctor could be avoided, the savings to the state from self-medication would amount to DG 450-750 million. However, these figures are estimates by medical doctors and pharmacists, and are not based on economic analyses.

In the United States, where extensive research on health economics is undertaken, only a few studies focus on demand for medical services related to minor illnesses or on the substitution between prescribed and OTC medications (Stuart and James, 1995; Fillenbaum, et al., 1995). Of these few studies, particular attention is paid to the research of Leibowitz (1989) because of its originality and, most of all, its research design. The research was part of the study referred to as the Health

Insurance Experiment (HIE) that Newhouse (1993) and others at the RAND institute initiated in 1971, and that lasted for about 10 years. HIE is a longitudinal study that experimentally altered the medical care cost-sharing faced by families. Between November 1974 and February 1977, HIE assigned families to insurance plans that differed in the amount of cost-sharing. According to this study, under a free plan (defined as no out-of-pocket cost to the family), compared to a 95 per cent coinsurance plan (families paid 95 per cent of their medical expenses), the demand for medical services increased by about 20 per cent. The spending on medical services under the free plan was 50 per cent more than that of the 95 per cent coinsurance plan. This means the price elasticity of medical service was, on average, 0.21.

Leibowitz (1989) focused on minor illnesses and analysed the substitution between prescribed and OTC medications. Her empirical results did not support the expectation that people assigned less generous insurance for prescription drugs substitute OTC for prescriptions. Although the price elasticity was not accounted for in either study, Newhouse (1993) indicated that, in the case of influenza, the price elasticity was around unity. This suggests that for minor illnesses, the demand for medical services is relatively sensitive to price.

In Japan, there are only a few studies that estimate the demand for medical services. Among these studies, Yamada (1997) used hospital-based data to estimate the demand for medical services. Without the use of a household-based survey, he was not able to analyse patients' preferences, decisions and behaviour regarding medical services.

Ii and Ohkusa (1998) were the first to attempt an estimation of the demand for medical services related to minor illnesses. They modelled explicitly the incidence of minor illnesses and, using micro household data, measured the price elasticity of the demand for medical care for minor illnesses in Japan. Their data, from the Basic Survey on People's Life (BSPL), were not experimentally or extensively collected like the data in the HIE. However, the sample size in the BSPL - about 600,000 - is much larger compared to that of the HIE, which is about 2,000. BSPL includes household and individual characteristics such as gender, age, income and assets, and detailed health information. Their results show that the price elasticity for medical services was 0.208, which is comparable to that for the United States, and that medical services and OTC medications are substitutes.

Ii and Ohkusa (1998) used patients' health information from the BSPL to define minor illnesses, and estimated price elasticity for various minor illnesses. They found that in the case of minor illnesses, the price elasticity for medical services were between 0.144 and 0.149. The data set also included detailed information on 43 subjective symptoms. The authors estimated price elasticity separately for medical services demanded for these 43 symptoms and found that, for almost half of the symptoms, the price elasticity estimated was less than unity.

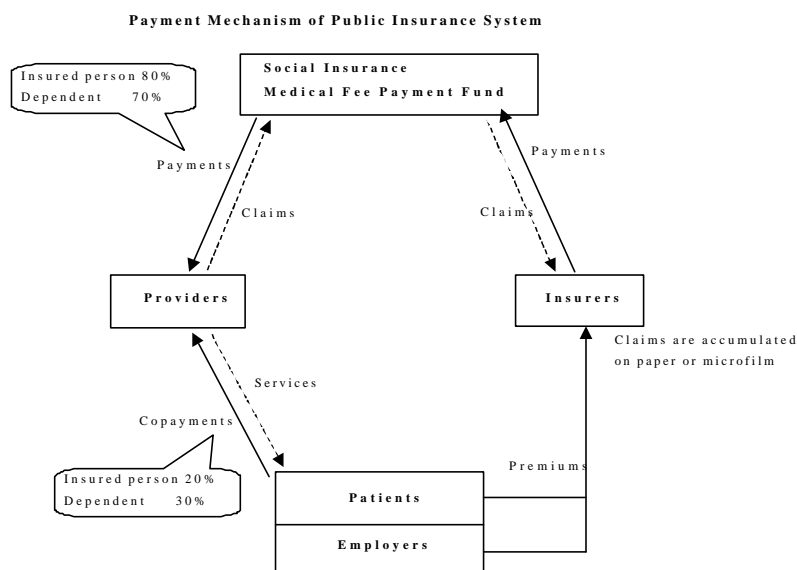
Medical Care Insurance in Japan

- All the Japanese are covered by public insurance system
- Public insurance system consists of some different schemes

Medical Care Insurance in Japan			
	Categories	Entities	Enrollments (millions)
Employee's Health Insurance	<i>Government-managed Health Insurance</i>	National Government	37.6
	<i>Society-managed Health Insurance</i>	Health Insurance Societies; <u>1,815</u> (each of them is established by a company or company group)	32.5
	Seamen's Insurance	National Government	0.3
	National Government Employee's Mutual Aid Associations	Mutual Aid Associations; <u>27</u> (each ministry, Agency and corporation)	4.1
	Local Government Employee's Mutual Aid Associations	Mutual Aid Associations; <u>54</u> (each local Authority)	6.8
	Private School Teachers and Employee's Mutual Aid Association	Mutual Aid Associations; 1	0.8
Community-based Health Insurance	<i>National Health Insurance</i>	Municipalities; <u>3,251</u> Associations; 166	46.9
Health and Medical Service System for the Aged	Municipalities	Municipalities; <u>3,251</u>	11.3

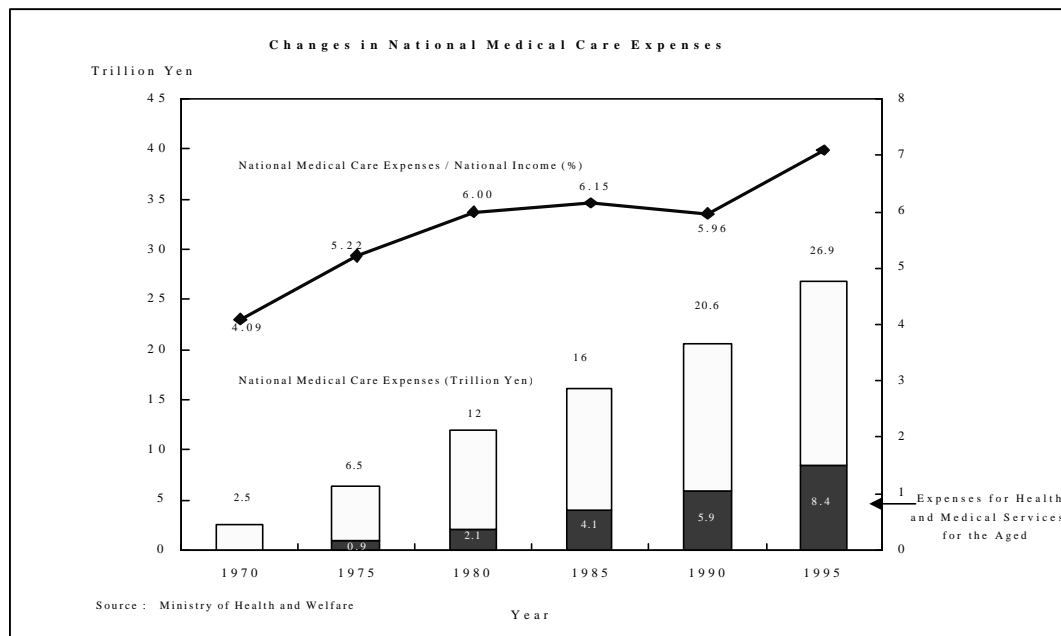
Payment Mechanism of Public Insurance System

- All the insurance schemes offers basically same set of comprehensive medical benefits
- some difference in premium ratio, reimbursement ratio, and state subsidy --
- The fee-for-service system operates under a minutely defined price schedule set by the government.



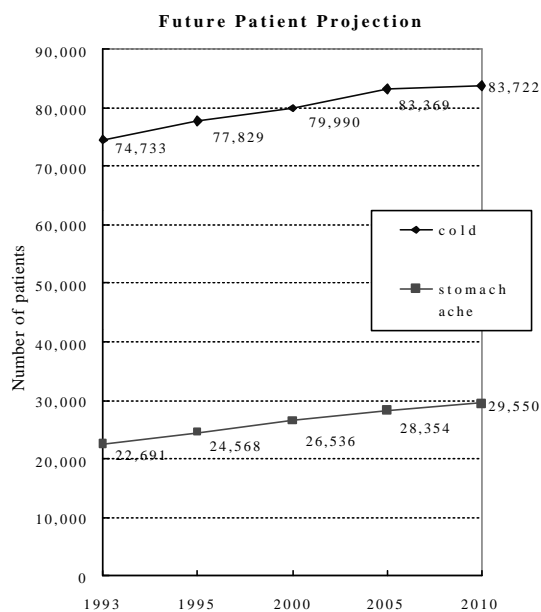
Changes in National Medical Care Expenses

- As a ratio of Japanese national income, medical costs have held at around six to seven percent since 1979, which is little more than half the ratio in the US
- National medical costs are continuing to rise by at least one trillion yen every year.
- The aging of the population is the most important factor in expenditure growth.

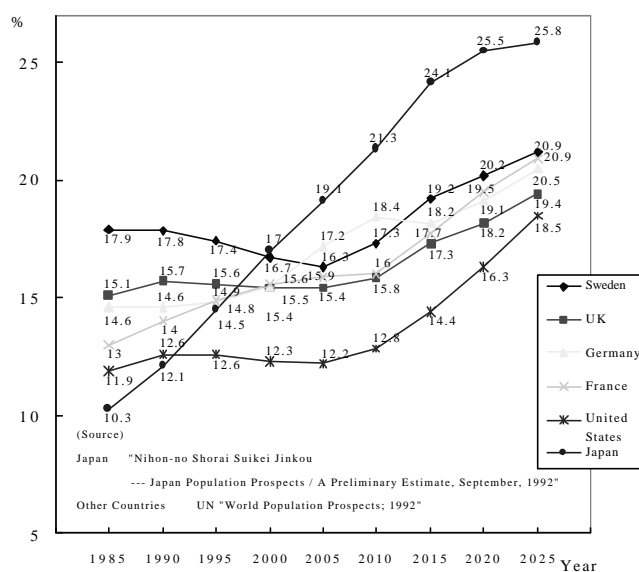


Future Patient Projections

- The rate at which the Japanese population is aging is much faster than in any other industrial nations, and the figure is projected to reach 17% of the population in 2000. This is expected to contribute to a continued rise in medical care costs.
- Over the period from 1995 to 2010, we expect an increase of about 1.04 times in the annual number of cases of cold and about 1.23 times in the annual number of cases of stomach ache.

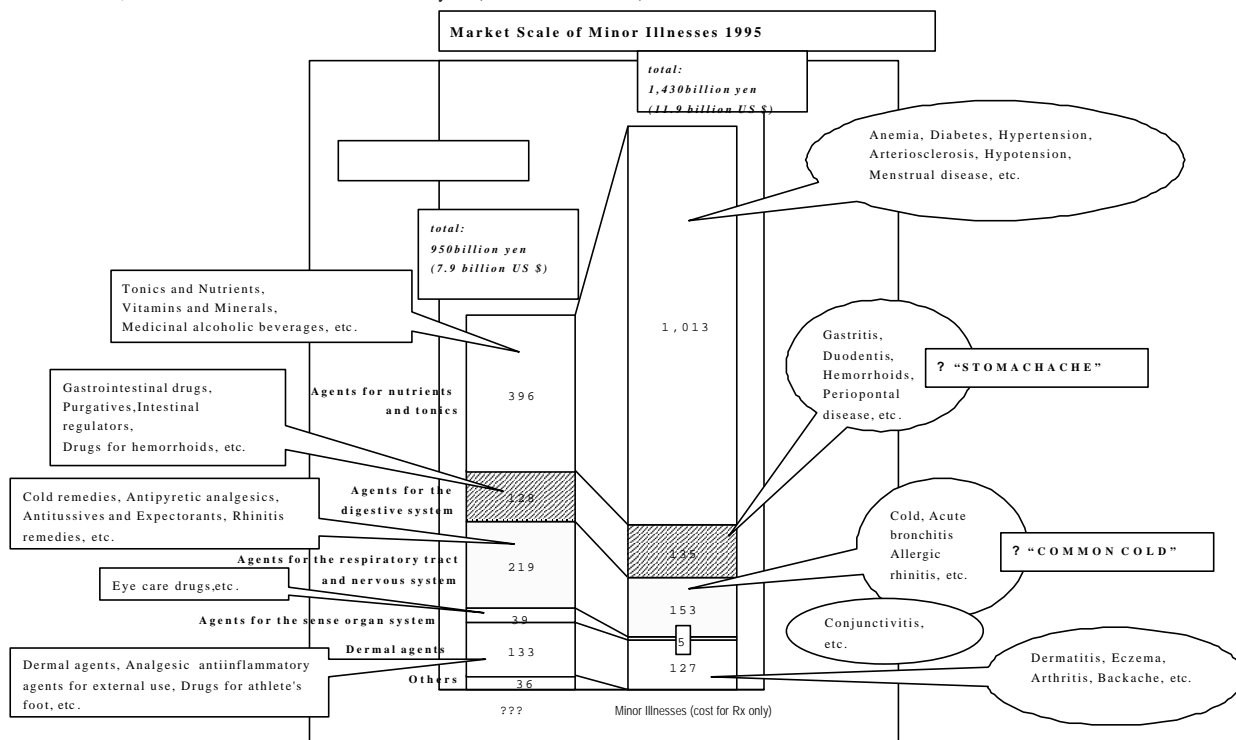


Proportion of Total Population over Age 65



Market Scale of Minor Illnesses in Japan

-Estimated market scale of minor illnesses are as follows. Rx market for minor illnesses is 1,430 billion yen (11.9 billion US\$) in total, while OTC market is 950 billion yen (7.92 billion US\$)



Direction of Health Care Reform

- Most of the discussions are focused on medical service supplier side.
- Very little attention has been paid on consumers/patients side.
- The promotion of self-medication has never been a part of health care reform plan.

Direction of Health Care Reform in Japan towards 2000

1. Reform of National Health Insurance

- Review the scope of medical care insurance benefits, and copayment rates
- Reconstitute the health and medical service system for the elderly to contain the medical cost
- Unifying National Health Insurance Service and Health Insurance

2. Reform of medical fee system

- Introduction of DRG-PPS
- Separation of doctors fee from hospital fee
- Introduction of medical fee system according to provider function

3. Reform of drug price standard

- Introduction of Japanese-style reference price system

4. Reform of medical service supply system

- Functional specialization of medical facilities (acute disease or chronic disease)
- Regulations on beds according to provider functions, and on advanced medical supplies
- Introduction of profit organization, approval of financing from capital market

Objects of This Research

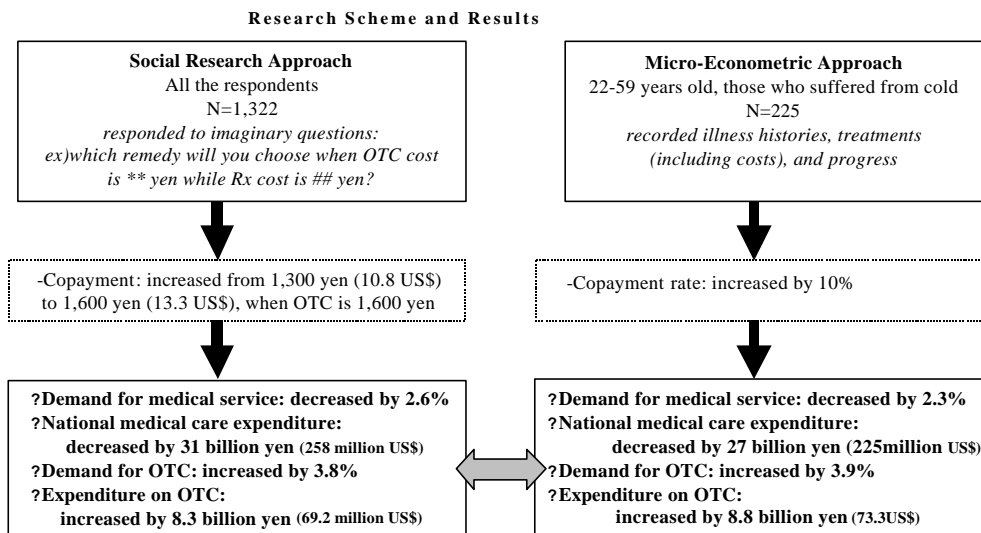
- To measure the effect of an increase in the coinsurance rate on national medical costs.
- To measure the substitutability between medical service and self-treatment with self-medication product.

Data

-From the survey conducted from 1 November,1997 to 20 January, 1998
 -In Metro Tokyo area and in Western Metro area
 -Household and individual characteristics,their illness histories, treatments,and progress.
 -Of the total 600 questionnaires distributed, 548 were answered.
 -A total of 250 individuals had caught colds during the survey period.

Main Results of the Research

- The two approaches yielded almost the same results.
- The study found that 10% increase in coinsurance rate decreases the medical service demand by about 2 % and increases the OTC demand by about 4 % .



cf. 1996 Total National Medical Care Expenditure, 28.5 trillion yen (238 billion US\$)

Information and National Medical Care Expenditure

- Knowledge about drugs can potentially promote self-medication.
- Information on drugs can help reduce the national medical care expenditure.

Research Scheme and Results

-In the survey: 3.5% answered they are knowledgeable about drug



-If 35% become knowledgeable about drug
ex) --pharmacist provides with more information at pharmacy
--public health education provided at school and community
--advertisement provided by pharmaceutical companies



- Demand for medical service: decreased by 3.5%
- National medical care expenditure: decreased by 41.2 billion yen (343millionUS\$)
- Expenditure on OTC: increased by 6.2 billion yen (51 million US\$)

Conclusion

1. Self-medication and market mechanism

- Self-medication and medical service can be substitute.
- Price increase in medical service increases the demand for self-medication.
- (Policy implication) Promotion of self-medication can help reduce national medical cost.

2. Importance of information

- Only 3.5% of respondents think they are knowledgeable about drugs.
- Those knowledgeable are more likely to medicate themselves.
- What is the information consumers really need?

Conclusion

Using original survey data, the authors examined the choice of health care in Japan for patients suffering from the common cold. Empirical results showed that the price elasticity for the medical service is between 0.23-0.36. These estimates are slightly higher than the estimates obtained by using the Basic Survey on People's Life but are comparable to each other. The results suggest that for minor illnesses price elasticity is around 0.2 and 0.4.

The price elasticity estimated here suggest that if a new medical insurance reform plan were to increase the co-insurance rate by 10 per cent both for insured and dependent persons, national medical costs may be reduced by at most 43 billion yen (358 million US dollars). The demand for OTC medications would increase by at most 8.8 billion yen (73.3 million US dollars).

Providing information on medication has a greater effect on reducing national medical costs. For example, by providing a tenfold increase in information on medication, the national medical costs could be reduced by 60 billion yen (500 million US dollars).

These results were obtained from a longitudinal household survey that included medical information as well as detailed household and individual characteristics. For future research, the OTC medication price elasticity and cross-price elasticity between medical service and OTC should be investigated and the method improved. Furthermore, research on other minor illnesses such as stomach-ache, stiff shoulder, and minor optical and ear-related illnesses should also be investigated.

This research benefited from a research meeting, 'Research on Minor Illnesses and Self-Medication', held in cooperation with Taisho Pharmaceutical Co. The authors would like to acknowledge the comments of the participants of the meeting, particularly Masahiro Toriyama and Maki Yoshida of the Nomura Research Institute. The views expressed herein are the authors' own and do not reflect those of their institutional affiliations. We would also like to acknowledge the assistance provided by Kazuko Matsumoto.

Surprisingly, there is no documentation that describes the national medical costs spent on relatively minor illnesses. One exception is a report on the medical costs for a common cold estimated by the Nomura Research Institute (1998). According to their estimate, in 1995, 500 billion yen were spent on treating the common cold. No estimates are available for other minor illnesses because nation-wide surveys are undertaken only on particular days. For example, the Ministry of Health and Welfare conducts a patient survey on June 1 every year, and a hospital and clinic survey on October 1 of every year. These surveys, conducted in summer or autumn, do not provide a reliable estimate of medical costs or resources used, for example, for the common cold or influenza. An approximate estimate shows that about half of the total medical costs are spent on outpatients. Of these costs, no information is given on the shares of the cost for minor illnesses or for chronic diseases, including geriatric diseases. There is a need for estimates of the medical costs for minor illnesses that may be addressed in future research.

