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Sweet Green Tea Consumption With Health Economics Matter

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Abstract: The sweet instant green tea consumption might affect to the consumers who consume in over quantities range. Moreover, the effect can impact on peers and society including a huge loss of country economy. In many countries are rare to do the research on cost of drinking sweet instant green tea widely. Therefore, aim of paper is to study and to analyze via by model on the health be treated as a stock of capital in term of economics planner as system management. It straights up to economic cost and mostly uses secondary data. Besides it provides the method of the descriptive research to seek knowledge through group discussion and to find out the actual information from the sample of experienced people on this issue. The economic cost points on investment cost. The outcome classifies being as a cost of drinking sweet instant green tea effects, method on cost analysis of green tea consumption and fundamental data on cost of sweet instant green tea. The research concentrates on cost–benefit analysis via the net present value (NPV) which it is the one of other approaches to support the medical department unit transparent checking. Furthermore, CEO of hospital can take it part as planning strategies and operational controlling. In addition, research can be used as the guidance in more future research on various cost of sweet green tea consumption that can worth to academicians, policy planners and other persons who concern on health and country economy.

Keywords: Consumption, Heath Economics, Stock of Capita, Health Economics Cost.

I. INTRODUCTION

The 12th paper of National Economic and Social Development Plan (2017-2024), focuses on the development of Thailand as a whole. Thai society is happy to share resources through the index of peace as well as happiness including healthy. That is the goal of empowering and developing people. Today's society is a highly competitive, so people forget their own attentions, especially in food taken. The convenience improves the natural taste. This brings about a decline in physical and mental health. Consumers who focus on convenient particular buying food from the convenience stores making Thai people forget that "Food creates the life". Nowadays, people in Thai society have a health problem more clearly as in the Table 1 below:

Table 1
Top 5 Deaths by Disease Group

Number	*Causing of Dead*	*Number in Year 1992 (per hundred thousand)*	*Number in Year 2002 (per hundred thousand)*	*Number in Year 2014 (per hundred thousand)*
1.	Heart Disease	32,131	45,834	67,065
2.	Accident and Poisoning	27,811	34,566	38,480
3.	Cancer	24,811	16,661	49,030
4.	Cerebrovascular Disease	24,500	16,361	10,788
5.	Diabetes	68	341	1,050

Source: Office of the Permanent Secretary for Public Health Ministry of Public Health (2016).

According to global consumers concerning, this paper brings up the new idea on the trend of the market for food consumption. It shows that the consumers turn to concern and willing to use the products which are produced in sustainable environmentally friendly and organic, natural and free of chemical residue. This trend of consumption becomes outstanding and vital because people are concerned more with their health. Ways of means, tea is one of the beverages that create and aroma when it is poured by hot or boiling water through the leaves (Romprasert, 2017). Heiss and Heiss (2011) say that tea is acted as medicine in both China and India. The Food and Drug Administration (2011) the same as Shafiquea, McLooneb, Qureshic, Leungd, Harta and Morrisonb (2012) claim that the number of drinking tea can affect to decrease or increase chances of being cancer. Seven cups per day is suitable number drinking. However, looking in the depth information, the effect on the bad side in caffeine and sugar content can cause side effects to consumers who drink in an excess amount on bottled commercial tea providing in convenience stores mostly now a day on the diabetes. The cost of illness must be concerned to do the measurement.

The Diabetes Association of Thailand under The Patronage of Her Royal Highness Princess Maha Chakri Sirindhorn (2015) announces number of diabetes around the world estimating 400 million in 2015 and will expect to reach 600 million on 2045. Every more than five minutes or one in every eleven people, the death person causes from diabetes. The diabetes patients have a low quality of life from various complications diseases (The International Diabetes Federation, 2007). If one considers on cost of treatment from diabetes, it expresses that diabetes is a major problem in public health. It is a chronic disease that requires the long term care because one has a higher blood glucose levels than normal (Office of Health Information System, 2006). The diabetes causes the cost to consumers, government and society in term of the expense in medical service, loss of revenue due to absenteeism, loss of productivity in the workplace, premature death of patients and others. Besides, the cost cannot be calculated such as the quality of life on diabetes patients. The diabetes affects to health causing decline in physical and disability that reflect to the mind. Furthermore, the diabetes people who have this disease more than 15 years also have eyes' disorders of the nervous including cardiovascular disease (The International Diabetes Federation, 2007).

In Thailand the trend of health expenses grows faster than previous period since 1980 in both government and private (Office of the National Economic and Social Development, 2014). Drinking and eating are the behavior perceptions that everyone must beware on. Consumption in high quantity within improper time can cause the disease and the loss of country economy. In addition, it also affects direct to consumers, peers and society. International Diabetes Federation (IDF) reports that the number of diabetic

today is around 300 million people and the number will increase to 400 million within 13 years especially in South East Asia (Puntuwet, Kapibul and Arbsuwan, 2010). The diabetic people must cost on health service 3.5 more higher than healthy persons; furthermore, World Health Organization (WHO) estimates that the budget is used for health particular on diabetes the most (The International Diabetes Federation, 2007. Male age 15 years and above has diabetes less different than female around 1.7 per cent contrasting to pre-diabetes occurs in female less different than male around 1.2 per cent. The highest diabetes number are found in the age range more than 60 years in female and more than 70 years in male around Bangkok area (Eakpalakorn, 2010).

Tea is a detoxifying property. The World Health Organization recommends drinking green tea in between meals, but not instant sweet green tea like in present. The production of a beverage such as sweet green tea now a day incentives people on increased in consumption because of releasing thirst and cheerful the feelings. In appropriate or excessive amounts on consumption can affect the human's physical. One bottle of green tea 500 milliliters selling in markets has a sugar content be higher than the standard of the World Health Organization defined. The consumers can be vulnerable to disease on diabetes and obesity. Therefore, objective of researcher wants to study the health be treated as a stock of capital in term of economics planner as system management. The outcome can be used as a guideline for the management and control costs more effectively is the expected benefit. The policy makers and planners can use the outcomes to apply especially on planning health project for long run sustainability. Furthermore, the relevant departments and ministries can allocate the resources for health system management in efficiently and in effectively.

II. LITERATURE REVIEW

In the aspect on "Health Economic", the consumption is not based on an assumption of economic reason; for example, the patients willing to pay money to cure their sickness no matter how much it is. So, the cost analysis on this study leads concept, theory as well as related research to set the conceptual framework in next chapter.

The poor effect can be caused on drinking bottle commercial tea for consumers' health in the form of caffeine and sugar. Caffeine is an alkaloid naturally found and sugar is the substance providing sweet sense. The original of sugar mostly made from sugar cane (Romprasert, 2017). Diabetes mellitus is also known as diabetes. When the physical body of someone fails to utilize sugar, the human body properly dues to lack of the hormone insulin (Gardner and Shoback, 2011). Sugar from product cannot utilized all, which store in the human blood caused high blood sugar level. The major symptoms start from the increasing of weight lost, tired and frequency of urination. Some patients have abdominal pain or respiratory problem. Diabetes in serious long-term can be caused so many diseases such as heart disease, chronic renal failure and blindness. Blood pressure control and personal lifestyle a factor is the key of treatment that can reduce the potential risk of diabetes.

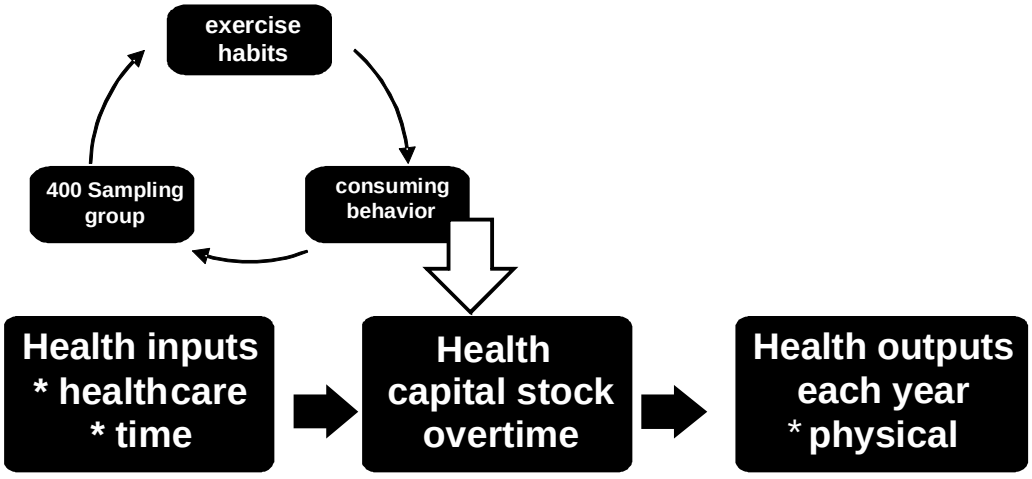
Cost is the value of the resources used in the activities in order to obtain a product or services including health services. It measures from price multiplying by Quantity of resources used. The accounting cost is counting only item that is paid to real money or explicit cost such as wage, rents, interests, raw material cost, transportation cost, etc. which they are recorded in accounting book. However, the economic cost is resources used on both monetary and non-monetary or implicit cost that there is actually paid. It also includes a cost is not paid out in cash but producers must take the actions evaluated such as return on

factors of production in the part of owners which economics calls "opportunity cost" (Kamolrattanakul, 1991; Poonpermsub, 1997). Costs and expenses are not the same. Some costs are considered as a part of the total cost and the opportunity cost of the activity that is not an actually paid. The expense is not the cost of activities in a single year but it might have to be divided into periods. Each type of cost is critical to use for development and improvement of the organization. So, the cost information is useful to control costs directly. There are many types of cost (Kongsawat, 1991). The first is called "internal and external cost". Internal cost is costs that incurred within the organization contrasting to external cost because it occurs to client (Danish Ministry of Transport, 2004). The second is called "direct cost and indirect cost". Indirect cost is cost that not caused by the events or serviced, but it caused by activities unlike direct cost such as allowances (Suppachutikul and others, 1996). The third is called "fixed cost and variable cost". Fixed cost is cost that is associated with the production, but it may change by the number of products such as increasing in salary. Variable cost is changed by quantity of products such as water supply. When one combines both fixed and variable costs, it will be called total cost (Hipi, 1987). The fourth is called "tangible cost and intangible cost". Explicit cost is the costs have been paid such as gas. Implicit cost is hidden costs that are not paid but it must be taken into account such depreciation (Kamolrattanakul, 1991). The fifth is called "medical cost and non-medical cost". Medical cost is the costs associated with medical services provided such as labor cost, material cost, and capital cost; for example, capital depreciation cost. Non-medical cost is unrelated to medical services provided such as transportation cost of client (Meltzer, 1997). Kanjananukul (1976) says that the cost of health services has different approach to business cost because it involves with all the departments. So, the cost must be counted as called unit cost or average cost this idea is matched with Sukharom and kanjananukul (1977) and Wannavake (1981) mention that cost on health calculated as in cost per client in each department or in each type of disease.

Everyone can see how much time and money one invests in his or her health capital. The price of health care, persons' wages and the productivity in the production of health will determine how resources are to be allocated between health capital and other goods including services that people buy (Pruckner, 2010); therefore, growing up, declining or remaining constant overtime of health stock depends on age, illness and/or injury as well.

III. METHODOLOGY

Conceptual Framework is shown as figure below:



First, the paper uses market-based data approach to review the information on bottle commercial tea and the preferences of consumers for health outcomes. Furthermore, it provides discusses issues to assess individuals' preferences for health using survey for 400 sampling to answer on consuming green tea behavior and exercise habits before continuing to analyze the cost of health concerned.

Second, the study analyzed the cost of health. The Grossman (1972, 1982) model mentions on "how do age, education, health status and income affect to the production of health through the demand for health capital". Health is not passively bought from markets because it is built by settling time with purchased medical inputs. Health can be treated both as consumption–making people feel better and an investment good–increasing the number of healthy days to work and to earn income (Pruckner, 2010). Regarding to Grossman model, one can measure the health investment identified as:

$$I = I(M, T_H)$$

$$B = B(X, T_B)$$

$$T = 365 \text{ days} = T_H + T_B + T_L + T_W$$

Time available for work or leisure = $365 - T_{H0} - T_{L0} = T_W + T_B$

Where

I = health investment (both direct and indirect)

M = market health inputs such as medical services, drugs, ... etc.

T_H = time spent improving health

B = home good production such as reading, playing, preparing meals, … etc.

X = market goods necessary for the production of the home good

T_B = time spent in producing the home good called leisure time

T = total time available 365 days per period

T_L = time lost to illness some of the time is taken over by ill health

T_W = working time income is necessary to buy medical care good M and other goods X

T_{H0} = fixed health enhancing time

T_{L0} = fixed time lost to illness

Furthermore, researcher blends Grossman's idea with the concept of net present value to show that the stock of capital in economic health can also be concerned on all of the direct medical cost; for example, direct cost of diabetic patients; direct medical costs for renal replacement therapy; cost of medicine including non-medical direct costs and opportunity cost. The value measurement on cost-benefit analysis is displayed with net present value (NPV).

$$\text{NPV} = \Sigma\, [B_t - C_t]/[(1 + r)^t]$$

It means the net present value of diabetes equal to present value of the result deducted current value of cost where B_t refers to the benefit on not to spend money on treatment of eye complicatios, treatment of coronary heart disease, treatment of kidney complications and treatment caused by chronic wounds in

year t; C_t mens the cost of yearly healthcare with diabetes from direct medical, direct non medical and indirect such as multiplication factors (no complication, nephropathy, diabetic foot, hospitalisation, tertiary hospital referral and hospital admission in year t; r is the discount rate (1.5% is announced by Bank of Thailand); t is the year in the model which it ranges from 0, 1, 2, 3, ..., n; n refers to the total number of years on absorbing state.

In general economic and finance perspectives, the net present value conversion (NPV) can be explained as : If NPV > 0 is worth on doing the investment. If NPV < 0 is not worth on doing the investment. If NPV = 0 is investment or no investment. However, in the sense of economic health, the diabetes is a chronic disease that affects many other health problems such as kidney and artery heart. Statistic data shows that in Thailand the patients around 3.5 million having diabetes. There are the complications from diabetes; for example, (a) eyes may be prematurely cataracts ; diabetic foot to the nerve causes numbness in the toes and easy wound causing disability ; kidney failure ; easily infected due to low immunity and ketosis, nausea, vomiting, severe thirst, deep breathing and fever.

The research design the cost via three areas. The first is direct medical. The second is direct non medical and the third is indirect. Those areas are linked to multiplication factors using for the calculation via NPV such as no complication, nephropathy, diabetic foot, hospitalisation, tertiary hospital referral and hospital admission. Also, the benefit mentions as the value that can be saved in each year on not to spend via other complications from diabetes (Diabetes Association of Thailand, 2015).

IV. DISCUSSION

The scope of study on cost of illness measurenment can be divided into 2 approaches. The main approach is the prevalence-based approach referring to measure the cost of illness per year occurring from past to the present. The second one is incidence-based appraoch which it is combined the whole life health cost with discount rate for adjusting to be present value. Moreover, the cost per person evaluation can be classified into 2 types. One is direct cost evaluation separating into direct medical costs and non-medical costs. The other one is indirect cost evaluation categorized into 4 appraches. Those are human capital appraoch ; demographic approach ; friction cost and willingness to pay approach. However, the research concerns indirect cost evaluation particular on demographic approach because it is the new cost evaluation specified on premature death.

The results from the survey research show that female who are age around 21-35 years drinks a lot of amount instant sweet green tea which it is around 5-6 times per week with imediately bought because it is very convinience to find inside every conner store. The attitude on drinking is because even though it contains over volume of cafeine and sugar but taste is great especilly duing the summer time. Moreover, the container is easy to carry. The consumers also mention that drinking te ais good for health without concerning in the long term of side effects caused the diabetes. Then, they do not think much on doing an exercise after drinking.

Besides the outcome from survey, the paper still needs to answer the main objective be to study the health be treated as a stock of capital in term of economics planner as system management. One uses to simplify the idea from Grossman's equations with to be the part on describing in the net present value concept as mentioned in the scope of the study. The measurement on net present value of diabetes health investment calculate following as :

$$NPV = \Sigma\ [B_t - C_t]/[(1 + r)t]$$

Where

B_t = Benefit on not to spend money on treatment of

1. eye complicatios = 126,000 Bath per time per year
2. treatment of coronary heart disease = 540,000 Baht per time per year
3. treatment of kidney complications = 96,000 Baht per time per year
4. treatment caused by chronic wounds = 57,600 Baht per time per year

Therefore, the total benefit on not to spend money on treatment from diabetes is 819,600 Baht per year per person.

C_t = Cost of yearly healthcare with

1. no complication = 4,000 Baht per year per person
2. nephropathy = 5,000 Baht per year per person
3. diabetic foot = 29,000 Baht per year per person
4. hospitalisation = 15,000 Baht per year per person
5. tertiary hospital referral = 20,000 Baht per year per person
6. hospital admission = 1,312,860 Baht per year per person

Therefore, the total cost of yearly health care from diabetes is 1,385,860 Baht per year per person.

And r = Discount rate = 1.5 % be announced by Bank of Thailand.

$T = 10$

Then, the total cash flow for the next 10 years which it shows the cash inflows from the health investment along with total cost of yearly health care diabetes people in Thailand. It can use the formula to calculate NPV: Net Present Value as : 819,600 – 1,385,860/[(1 + 1.5%)10] = –(566,260)/1.161 = –(487,735). The management for health care in Thailand would use the net present value rule to decide whether or not to pursue the acquisition of institutions because the NPV is negative and they should say "NO".

Even though NPV is used to analyze an institutions' investment decision and give them the management a clear way to say if the investment will add value to the institutions with a positive net present value, it should be considered. However, the health of people is not an objects but it is the life. So, even though it will not be worth to do investment as it usually should be. The government and health institutions cannot ignore because it is the social benefit not business benefit only. As mentioned by Rattanasarn (2013), there are 3 main aspects on concerning from diabetes that the government and health institutions might have to turn on.

1. Sick Person

The diabetes sufferers are directly affected by the age of more than 6 years in lifespan shortage and need to take a lifelong medicine (Aekplakorn *et al.*, 2009). Even though Thailand has a universal health insurance

system, but it covers only the required medicines no in a whole. Moreover, it does not include indirect care, transportation, lack of income from taking the leave and the disability that patients and families must bear on (Lindstrom. *et al.*, 2006).

2. Family and Helpers

The treatment of chronic diseases such as diabetes as well as cost burden. Long – term incidents could result in poor families dropping. Social and emotional impact on a family of diabetics, it may be more direct costs due to treatment and from lose revenue. The diabetes has negative impact on relationships between family including the society quality of life has decreased. Helpers and supporters from outside society have to play a big role. It will enable diabetic patients to take care of their own health and provide cooperation for better treatment.

3. Employers and Country Economy

The death at a young age or chronic illness or disability has an economic impact on the whole family including society has increased the burden on employers and the nation. Employees with poor health result in lower productivity. Frequent absences cannot work full capacity because physical health problems and mental illness early retirement defined as well as premature death. If this problem cannot be tackled, then the burden of health costs and economic losses will be huge.

The significant strategies support systems from both public and private hospitals sector should be covered in such as

1. Government hospitals should collaborate with private hospitals on patient referral systems by concreting the committee on development of patient referral system is appointed. Establish monitoring and evaluation system including meeting are to review the lesson from the submission problems.
2. Having an innovative uses of IT systems or refer online to manage the operation of delivery patients. Also, making the transition to patient care has more effective. Furthermore,
3. Government should promote the reduction of holistic health risk factors by creating health along with improving the quality of public health administration.

The development of national health database from both public and private sector is the key factor as well as the development of human resources in public health. Both public and private hospitals should not ignore on rewarding the production and distribution of personnel supporting health care persons such as compensation and convenience of their lives to motive them doing the jobs be effective and sustain in health care patient lives.

V. CONCLUSION

Health economics is the application of economic principles via policy on planning and organizing health services for patients by deciding on a cost-effective alternative to investing or servicing. Demand for health care on diabetes inputs is demand derived from the demand for health itself as recommended by Grossman. The individuals will allocate resources in order to produce health capital. Benefits of good health concerned

are increasing as a person ages. Person wants to invest in his or her health even if the only value of health is an effect on earning future income. Moreover, one makes the choices for many periods over life cycles. The sweet instant green tea consumption might affect to the consumers who consume in over quantities range. Moreover, the effect can impact on peers and society including a huge loss of country economy. In many countries are rare to do the research on cost of drinking sweet instant green tea widely. Therefore, aim of paper is to study the health be treated as a stock of capital in term of economics planner as system management. It straights up to economic cost and mostly uses secondary data. Besides it provides the method of the descriptive research. The economic cost normally points on labor cost, capital cost and investment cost via simultaneous equation method. However, this paper points only on the investment cost. The outcome classifies being as cost of sweet instant green tea effects, method on cost analysis of green tea consumption and fundamental data on cost of sweet instant green tea. The research concentrates on cost – benefit analysis via the net present value (NPV) which it is the one of other approaches to support the medical department unit transparent checking. Furthermore, CEO of hospital can take it part as planning strategies and operational controlling. In addition, research can be used as the guidance in more future research on various cost of sweet green tea consumption that can worth to the policy makers and planners can use the outcomes to apply especially in planning health project for long run sustainability. Also, the relevant departments and ministries can allocate the resources for health system management in efficiently and in effectively.

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