

THE DEVELOPMENT OF HEALTH CARE MANAGEMENT SYSTEM PROTOTYPE FOR COMPANIES

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ABSTRAK: Masalah kesihatan di kalangan pekerja adalah satu masalah sosial yang kritikal di mana ianya amat rumit dan sukar untuk diatasi. Ia bukan sahaja dihadapi di negara-negara membangun bahkan negara maju seperti Amerika Syarikat. Justeru itu, pelbagai kaedah perubatan moden telah diperkenalkan melalui kaedah perubatan teknologi terbaru dan ubat-ubatan. Namun, segala usaha masih tidak dapat mengurangkan kadar masalah kesihatan rakyat. Sebaliknya, setiap tahun kos perbelanjaan perubatan individu mahupun negara kian meningkat pada kadar yang amat membimbangkan. Lantaran itu, satu pendekatan iaitu Health Care Management System diperkenalkan sebagai kaedah alternatif untuk mengurangkan masalah-masalah kesihatan pekerja.

ABSTRACT: The health problem among workers has become a critical social problem, which is very complicated and difficult to overcome. This problem is not only faced by developing countries but also by developed countries such as the United States of America. Various modern medical solutions have been introduced through new medical technologies and medicine to reduce the problem. However, the solutions found are not really enough. Every year, individual as well as nation medical expenses increase at a very high rate. Thus, in this paper we present an alternative approach known as Health Care Management System that is hope to reduce health problems among employees.

INTRODUCTION

Health Care Management System perhaps is the first type of medical system for companies, which has never been implemented by any companies yet in Malaysia. It is a great challenge to develop such system and recommend all sizes of industries to use it.

We are now mostly talking about Total Quality Management, Human Resource Management, Supply Chain Management, Multi Super Corridor, etc. As a result, we have computerized an information system on Total Quality Management, Human Resource Management, etc.

However, employee health care is the topic that has not been yet treated as important issues by the western management gurus. As such, Health Care Management System has not been used widely in any companies yet. The only medical system available now is in the health care organization such as hospitals or clinics.

Health problems in companies have become quite important issues. Some industries are facing very critical health problems. For instance, some companies with 1000 staff are spending RM10, 000-RM20, 000 monthly on medical expenses. This amount is not yet including the amount for those who might have more serious diseases that can cost few thousand or more. In such situation, most companies would not sponsor them. Thus, this would be a disaster to the employee and their families. In addition, this will also indirectly affected the company productivity performance.

Therefore, with such fearful monthly expenses, it means the employees are not healthy all the times. In this case, how would we expect the employee to give the maximum output or productivity to the company! It also shows that the TQM or Human Resource Program is not yet the perfect concept of total management solution. Something very important is missing here – the health!

Briefly, a good health condition for all employees is very important. A good health body means better productivity for companies in terms of less medical leave by employee, excellent of mental and physical at all time, better output in their work performance and better decision making.

PROBLEM STATEMENT

According to scientist, diseases such as cancer, heart attack, high blood pressure, diabetes, tumor, stroke, etc. are all classifies as modern diseases. Every year we are hearing the appalling statistics of such diseases are increasing dramatically in all counties including advanced countries as well as developing countries.

Several major factors causing all these diseases are due to:

- ◆ Changing of life style e.g. Busy life style, sleeping late, lack of exercise, too long working hours, lack of social entertainment, etc
- ◆ Changing of diet e.g. More fast food as a main diet due to hustle and bustle of working hour among all employee nowadays
- ◆ Bad habits such as drinking alcoholic and smoking
- ◆ High pressure in working space
- ◆ Pollution of surrounding environment due to fast development process

According to medical scientist, 99% of modern diseases can be avoided. Hence, in order to cut down the medical budget, the Government has put all kinds of effort such as implementing more health education through electronic media aggressively. However, the return or the target objective seems does not offer much improvement. The publics are still not realizing that the significance of having good health. They rather wait until every thing is too late. It means the public do not aware the importance of prevention rather than cure.

After some analysis observation has been carried out, one way to aware the public about healthy living is to use companies as the platforms to convey the health care program to employee. The companies become as the best place to provide health care

management and training to all level of staff rather than carried out in hospitals or clinics.

With such Health Care Management System placed in company, health care specialist can use this system to monitor each employee health history record. Proper suggestion and advice certainly can be given to that employee. This is very important in educating the employee on how to prevent diseases that might be too late to cure. Therefore, such system plays the main role in monitoring the employee health performance periodically and in providing the necessary information for analysis purposes.

LITERATURE REVIEW

According to Wan Mahmud (1996), the environment contributes significantly to the health of the individual, be it the working environment or the general environment in which he lives, whether in the urban or rural setting. Occupational Diseases and Industrial Health is an area that needs greater focus in a nation that is rapidly industrialized like Malaysia. In our enthusiasm to create more business opportunities we may cut corners particularly in areas of health and safety in various industries. We need to scrutinize the short and long-term health effects of these industries before accepting them. We may build industries but fail to install health and safety devices or anti-pollution measures which may be expensive, in order to cut costs. All these have long-term effects and it may be more costly to undo these damages at a later date. We may be penny wise and pound-foolish. We should learn from the experience of the other countries that have undergone these processes so as not to repeat them.

As mentioned by Wan Mahmud (1996) also, besides the obvious factors influencing the morbidity pattern and disease burden among the communicable diseases, non-communicable diseases and environmentally related diseases, there are several other

contributory factors which can either directly or indirectly affect the health of the nation. Among some of these factors are following:

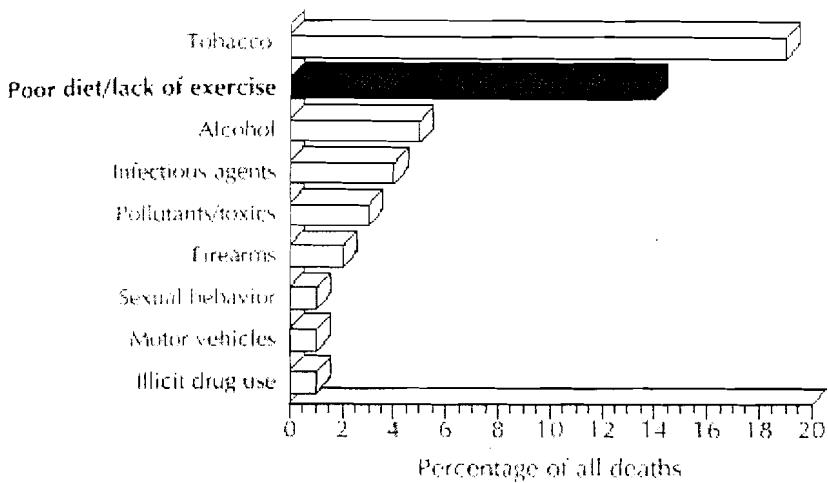
1. Lifestyle changes
2. Value system whether ethical, moral, religious or social
3. Economic factors such as affluence and poverty
4. Industrialization and
5. Immigrant workers

Regarding lifestyle, Wan Mahmud (1996) explained that lifestyle has certain effects on the health status of the individual and society. In 1991, a series of Health Lifestyle Campaigns was launched on cardiovascular diseases and strong emphasis was given towards

1. Having adequate exercise such as jogging, walking, aerobics and games,
2. How to cope with stress at work or at home and social environment
3. How to regulate diet and nutrition to prevent overweight and control of fat and cholesterol in the diet
4. To stop smoking

As reported in the Journal of the American Medical Association (1993), one of the actual causes of death in the United States is lack of exercises or poor diet. The following figure shows the percentage.

Actual Causes of Death, United States



According to Center for Disease Control and Prevention (CDC), chronic diseases such as cardiovascular disease, cancer and diabetes account for 7 of every 10 deaths in the United States each year. Although much remains to be learned about the role of physical activity and nutrition in health, a wealth of researches done in the United States show that inactivity and poor nutrition are responsible for thousands of unnecessary deaths, illnesses, and disabilities associated with chronic diseases. Interventions that promote healthy eating and physical activity behaviors may not only prevent some of the leading causes of illness and death but also decrease direct health-care costs and improve quality of life.

Poor eating habit such as taking too much fat can also lead to obesity. People who are overweight are at increased risk for heart disease, high blood pressure, diabetes, and possibly cancer. Being overweight also worsen the disabilities associated with arthritis. According to CDC, the total economic cost of obesity in the United States in 1995 was estimated to be nearly \$100 billion.

Stress if not manage carefully can cause or worsen some of our most common killers - cancer, heart disease, and cerebrovascular. It cans also leads to other common disorders such as colitis, impotence, and depression disease (<http://www.endo-society.org/pubaffai/factshee/stressrd.htm>). In addition, the stress of illness itself can hinder recovery from almost any disease. In order to reduce the incidence of certain diseases, level of stress should be reduced first. Proper intervention such as quitting smoking, losing weight, reducing cholesterol levels, eating well or exercising can reduce the stress.

Modeling the health sector is important for planning purposes. However, Nasaruddin Arshad (1996) found that there are nonetheless several difficulties involved. Firstly, the definition of health is rather vague and difficult to measure. The World Health Organization (WHO), for example, defines health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease infirmity". This definition is not only broad, but also equally difficult to operationalise. Health cannot be simply treated like other economic goods (Mooney, 1992). Secondly, there has been relatively little research done on the modeling of the health sector in developing countries. As such, there are very few references in this area.

SIGNIFICANCE OF THE STUDY

A proper health care management has not yet been implemented in all companies in Malaysia. The increasing medical expenses among all companies have strived us to develop a prototype of a health care management system for all companies.

With such system, we can see several advantages that can contribute to companies, individual, and nation as a whole. For instance, besides the public health education through electronic media done by Health Ministry, this Health Care Management System will help many parties in different perspectives:

- ◆ Employee
Better monitoring of their health condition, benefit from health education program conducted by Health Ministry; avoid unnecessary medical expenses, and better health education to their family members

- ◆ Employer
Saving medical cost through better monitoring and reducing the company medical expenses, allow the tracking of employees that always have health problem on a periodically basic.

- ◆ Health Ministry
Provide better assistance to individual company and better target achievement in terms of reducing health problems among employee, better monitoring health problem in different industries through such system with accurate information available; create close relation with companies

- ◆ Integration of different medical professions
Besides physician, medical profession such as dietician, environmental health specialist, sport specialist, psychiatry, etc will work as a team to diagnose patients. The cause of disease will be better identified and appropriate treatment can be given.

- ◆ Shifting of basic medical knowledge to company's staff instead of Health Ministry staff or doctor only.

Some very basic health care knowledge should be transferred to a responsible person from each company instead of depending solely on doctor or supporting staff from the Health Ministry, which are lacking trained manpower.

OBJECTIVE OF THIS PROJECT

The purposes of this project are:

- ◆ To gather medical knowledge from different medical professionals into a computerized *conceptual modeling*
- ◆ To develop a very *basic health care modeling and prototyping* health care management system
- ◆ To introduce new idea of a total health care solutions and management perspective to company's top management
- ◆ To let both medical profession and company users evaluate the beneficial of this system

Importance of this initial prototype system to the future development:

- ◆ To allow the future detail and comprehensive development on this health care management system
- ◆ To enable more comprehensive users involvement by larger groups of companies (perhaps up to national plan)
- ◆ To invite more national and international medical professionals to assist modeling the health care management system
- ◆ The system design will comprise more aspect such as Occupational Safety and environmental pollution aspect

Briefly, if the idea of this prototype is fully support by all parties, the next stage of research hopefully will invite more credibility parties such as,

- ◆ Medical Specialist from World Health Organization to represent medical specialist perspective
- ◆ Medical Specialist from Malaysian Health Ministry to represent medical specialist perspective

- ◆ Federal of Malaysia Manufacturing to represent users perspective
- ◆ Consumer Association of Pulau Pinang to represent users perspective, etc

Hopefully, the final goal of this research is to standardize the health management among all medical professionals and enable such system to be able to implement across all industries.

METHODOLOGY & SOFTWARE REQUIREMENT

Methodology

As part of IT software development process, several main phases still remain the same. It basically involves phases as listed below,

- ◆ Preliminary Study

During the preliminary study stage, some activities involved are:

- Interviewing with health/medical specialists

Health Information has been collected and advised by few medical specialist such as

- ◆ Hospital Jitra (Mr. Pak Wan)
- ◆ Hospital Besar Alor Setar (Dr. Viveknathan)
- ◆ Klinik UUM (Dr. Wan)

The idea of this prototype system is to come out with total health care solutions. Therefore, the information/knowledge gathered comprises of medical specialist

from different aspect such as Mr. Pak Wan in aspect of food safety and nutritional, Dr. Viveknathan in aspect of stress management and Dr. Wan in aspect of drugs as physician

- ◆ Medical Literature Review

Due to the budget limitation, this project has difficulty to involve more health specialist such as sport specialist, environmental health specialist, some information are collected through the Internet and medical books at Universiti Sains Malaysia. The literature review has assisted us to better understand the total health concept and then implemented them in a total conceptual health care modeling.

- ◆ Interviewing with the users

Some parties such as Persatuan Pengguna Kedah and a company has been selected, Pro-Ericsson Sdn Bhd to represent the users perspective. It is important so that the system developed in the future will be implemented by the company and beneficial to them in all aspects.

Besides that, base on some feedback through the phone talk from few companies, most companies are facing very expensive staff medical expenses. They are keen and interested to see such a Health Care Management could be able to solve their problem. For instance, a company with 1000 staff is spending RM10, 000 to RM20, 000 per month on medical bill itself.

Therefore, it definitely a need to develop such system to solve most Malaysian's industries especially the health issues.

- ◆ Requirements

To model health care is not an easy task. All health care information collected needs to be analyzed and selected as well as relevant in this context. Much information selected however needs further classification and filtered out and need further approval by the health specialist.

However, the scope of this project is currently only cover the main issues. For instance, food pyramid, stress management, living style and exercise would be the only scope at this stage. This area is the scope that has been approved by the Health Ministry as the best ways of prevention to improve and maintain the people good health condition.

Occupational Safety and environmental pollution are not under this study.

- ◆ Analysis & Designing

Based on the requirements has been carried out at the earlier stage, the health care conceptual has been modeled.

The summarized conceptual Modeling is shown in the appendix 1.

As being notified earlier, this project is mainly to obtain the right health care domain and then transfer them into the computerized conceptual modeling. However, much of the information captured still requires a great discussion among medical profession and the user as well. Therefore, technique such as Entity Relationship Diagram, Database Normalization and Data Flow Diagram are found not necessary at this stage.

◆ Coding & Testing

The intention of this prototype is to enable the medical professions and company users to see how the computerized system could help both parties in managing the employee's health. This rapid prototyped system plan to serve few purposes:

1. Any amendment on the information domain could be discussed and allow future enhancement.
2. Both parties such as medical profession and company users could easily come to consent on how this system could help both parties.

The most suitable software for developing this prototyping is Microsoft Excel. Its flexibility and fast prototype development allow the system to be completed in couple of weeks.

◆ Final Prototyping & Evaluation of this system

The final prototyping system will be presented at some institutions such as: -

- Hospital Jitra
- Hospital Besar Alor Setar
- Klinik UUM
- Persatuan Pengguna Kedah
- Pro-Ericsson Sdn Bhd

Overall, they found that this project is a very good research area and hope to get the system ready to be used as soon as possible.

Software Use

As mentioned earlier, Microsoft Excel has been chosen as the best tool to develop a fast prototyping system.

DISCUSSION

Health issues among employee in all industries are in fact very critical issues. However, till now, there is still no proper channel or procedure that the employer could rely on to better control their employee health condition as well as the medical expenses.

Improper diet, polluted food, environmental pollution, industrial pollution, stress, changing of life style has significant causes the diseases to increase dramatically. Till now, there is still no proper Health Care System available in the market that could assist company to prevent or reduce all kinds of diseases.

Therefore, it is the right time to develop such a Health Care Management System prototyping. The final aim is to enable all companies especially in Malaysian to use such system as a standard health care procedure to monitor their employee health condition. At last, employee productivity could increase and thus reducing companies' medical expenses.

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