Health Economics in Dentistry, Second Edition

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1. Preface to Second Revised Edition

This book serves as an introduction to the economics of dentistry. No background knowledge of economics is assumed, as the basic laws of economics are presented along with their application to the oral health care sector.

Textbooks in health economics first appeared in the 1970s, and all introductory works on the subject have focused on general medical or pharmaceutical issues and hospital economics. However, oral health concerns often differ from those commonly encountered in general medicine; sometimes there is overlap, but certain issues are unique to dentistry and thus demand specific attention. As earlier textbooks have been penned by economists, and with practically all examples drawn from the hospital realm, the need has arisen for an introductory text with a dental perspective which addresses health economics from the clinician's point of view.

Treatment decisions are never based solely on the clinical picture; they are more or less influenced by the opinions, values, attitudes and economic considerations of both health provider (dentist) and consumer (patient).

The absent or minimal medical perspective in earlier texts understandably leaves them lacking in clinical orientation, and thus of only partial use to most medical professionals.

This book presents basic economic theory and laws in the context of dental health care, accompanied by plenty of examples from everyday life in dentistry.

One of my main aims for this book is to convince 'dental doubters' of the advantages of a good working knowledge of economics in everyday clinical dentistry. To the extent that I achieve this my efforts have been worthwhile.

The first edition of this book was published in 1994 and in the past few years many of my oral public health colleagues have asked me whether it would be a good idea to edit and update the text. I should of course have done this sooner, but over the years I told myself that it would be just too time

consuming. But eventually I came to the conclusion that the effort would be worthwhile and that there was a genuine need for a new revised edition.

Practically all the chapters have been revised, some more than others. The fact that I have not included any completely new chapters does not imply that all important issues were already covered in the first edition. Far from it - I am the first one to admit that it could have been a much more comprehensive book. Because it was an introductory text, however, I was forced to limit the content to the most important issues and particularly those I regard as the most relevant in dentistry.

2. INTRODUCTION

What is dental health economics?

There are two major schools of thought in the interpretation of health care economics. The predominant one is the Economistic approach, promoted by those in the field with a background in economics. In this perspective: 'health economics is a special branch of economic study which attempts to apply economic laws to health issues'. This interpretation has gained ground because most of the study and teaching of health economics involves economists rather than health care professionals.

Health care professionals, on the other hand, tend to regard the subject from a Public health approach, along the lines of: 'health economics is a joint arena in which economists and health care professionals examine the effects of economic factors on health and how health and related factors affect the economy'. This approach attempts to be more comprehensive by enrolling both economic and health perspectives.

Although economic laws are often easily applied to various sectors, dentistry and medicine are fundamentally very different from the market for vegetables, radios or cars, for instance. An appointment with a dentist involves factors which are not economic in nature, and thus render it very different from a normal consumer transaction. Nevertheless, economic concerns certainly have an impact on people's health. Finally, when studying this relationship, the influence that health itself has on the economy should not be trivialized or ignored.

Positive economics attempts to characterize economic realities. By describing how economic laws function in a society and how one economic act is related to another, positive economics endeavors to predict, for example, how changes in income levels will alter the utilization of dental services.

Normative economics also explains how various factors in the economy interact and predicts the outcome of changes. In addition, however, it aims at a more social orientation by introducing value-based statements on how aspects of the economy should function.

Personal views and values have a powerful influence on attitudes towards various economic matters and measures. Some people, for instance, are strongly in favor of a free market in health care, and support the freedom of both dentists and patients to choose each other. Others, by contrast, would prefer to see the authorities adopting firmer control over such matters. When approaching topics using normative economics it is important to state at the outset which values the analyses are based upon. In this book, most economic laws are dealt with from the perspective of positive economics, though the normative approach is also utilized when deemed relevant.

The economy is based on transactions between individual suppliers and consumers, who together constitute a market.

The description of the market based on its characteristic transactions and the laws that govern decision-making on this level is called microeconomics. But it is not possible to describe all activities in the economy on the basis of individual transactions, since there are more aggregate and general factors to consider, too.

The macroeconomics of health encompasses such things as employment rates in the health care sector, or the proportion of GNP devoted to health care. This book, however, concentrates on the microeconomics of dentistry. Dentistry itself is a segment of the overall health care market which, in turn, accounts for just a proportion of the entire economy of a society.

Microeconomics and health

Personal health, individual finances and health services are closely intertwined. Good health status reduces the need for and use of health services such as dentistry. Someone with good oral health throughout childhood and adolescence is less likely to need extensive crown and bridge work in later years than a person prone to cavities and periodontal work in their youth.

It is also fair to assume that a person who has utilized health services will enjoy better health status than one who has not done so.

The individual's health status has a vital impact on their performance in the economy, influencing their productivity in the work force as well as their earning potential. Even minor disorders such as toothache and the common cold can cause hours or even days off work, while more severe problems like major surgery often result in months of absence from productive

employment. Dental health services have to be paid for, either directly out-of-pocket or indirectly through an appropriate insurance policy. Moreover, visits to dental clinics sometimes cause loss of income, especially among the self-employed.

A person's financial situation is often reflected in their health status: several studies worldwide reveal that people in lower economic categories tend to have poorer oral health status than the better off members of their society. It has also been shown that higher financial status clearly predicts improved utilization of oral health services.

A network is the best way to depict the relationships between health, health services and the economy (Figure 2.1). It can be hard or even impossible to disentangle these relationships, because one factor depends on the other which, in turn, hinges on yet another.

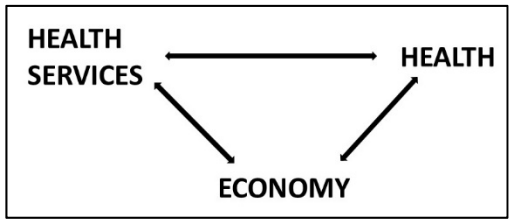

Figure 2.1. Interaction of health and the economy

For example, higher earners use oral health services more than poor people; this results in better oral health, which thereby reduces the need for large-scale rehabilitation and thus lightens the burden on personal finances.

The laws of economics permeate all areas of the health field, dentistry included. Sometimes an economic model fits dentistry well, while often it is only modestly successful. Treatment strategies formulated by dentists are - as with physicians - based first and foremost on their knowledge of physiology, pathology, anatomy, biochemistry, etc. Economic considerations enter the picture according to the dentist's and patient's mutual understanding of the situation: how much the dentist knows about the patient's financial status and how far the patient understands the disorder, the suggested treatment, the likelihood of success, and the alternatives. Unfortunately, such mutual understanding often develops far less than it could and should do.

Macroeconomics and health

As turnover in the health sector has increased, dentists along with other professionals have enjoyed accompanying improvements in their work facilities and environment. In most industrialized countries dental services take place predominantly in the context of private practice, which has ensured comfortable and rising incomes as ever more money flows into the sector.

Economists have been concerned about the spiralling costs in the health sector for several decades. An overview of this trend in selected OECD countries is presented in Table 2.1., which shows how the proportion of health care expenditure in total domestic expenditure has expanded over the years.

Table 2.1. The proportion of health care expenditure in the total domestic expenditure of selected OECD countries

	1960	1970	1980	1990	2000	2010
Canada	5.3	7.2	7.5	9.0	9.2	11.4
Finland	3.8	5.7	6.4	7.8	6.7	8.9
France	4.3	5.9	7.5	8.6	9.3	11.6
Japan	3.0	4.6	6.5	6.7	7.6	9.5
Norway	3.2	4.9	7.1	7.7	7.7	9.4
United Kingdom	3.9	4.6	5.9	6.0	7.3	9.6
USA	5.3	7.4	9.2	11.9	13.1	17.6

Sources: OECD Health Systems: Facts and Trends 1960-1990, Volume 1. Paris, France: OECD,1993 and OECD Health Statistics; Health Expenditure and Financing 2017.

Over the past 50 years the health sector's financial burden has more than tripled in many industrialized nations, and still remains high. A level as high as 20% might appear a satisfactory, even desirable, development from a purely medical perspective, but the concerns of economists and administrators are well-justified - each percentage rise in health care means a loss for some other area of the economy. There are never enough resources

to meet all demands, so should education, transport, national defense etc. have to suffer cuts in favor of health? And if so, by how much? An opposing view is held by those who dispute the priority given to the health sector. While not faulting the need for advances in health care, they are concerned about the much faster rise of investment in health care compared to other sectors of the economy.

There are urgent calls for more effective and efficient deployment of resources in the health care sector. It is claimed that the health outcomes so far achieved with present inputs could well have been accomplished with more modest resource allocation if the sector had been forced to function more efficiently.

The dentist as entrepreneur

In order to function, a dental clinic must make a profit, or be subsidized. In the setting of public health care provision a clinic runs by consuming resources supplied or subsidized by the authorities. The fees charged to the patients are the basis for paying running costs, maintaining material stocks and equipment, providing salaries to assistants, and repaying bank loans plus interest. The income of the dentist depends on the level of the remaining profit generated by the clinic's activities.

In theory, serving the best interests of the dental patient means combining the best possible clinical treatment with the minimum pain, discomfort, inconvenience and expense. It is rarely possible in practice to optimize all these requirements simultaneously, so the dentist needs to compromise in one or more of them. Focusing exclusively on the best clinical outcome while neglecting other aspects is hardly likely to result in the optimal outcome for the patient.

Entrepreneurial thinking is a vital ingredient in the everyday running of a dental clinic. Decisions taken by clinicians, based on their professional knowledge, can seem strange to the lay person, but are often clearly business oriented to the experienced eye of other dentists. While we assume that dentists aim to maximize the oral health of their patients, the economic dimension of their strategies is always exerting its pragmatic influence. However, although some dentists are more business oriented than others it would be unfair and inaccurate to label the entire dental profession and market as overly commercial.

Dentists treat each patient individually, as it is impossible to categorize people for certain treatment packages. Because of the uniqueness of each case, dentists have a personal perspective to oral health care. By contrast, economists and other social scientists are not faced with unique individual cases and do not have to make decisions about a single person's health. Their concerns about the costs of oral health care involve treating people collectively as percentages or averages, which makes it somewhat easy to demand reductions in health care costs and in numbers of performed procedures. This indirect or hands-off role gives economists a social perspective to health care.

The view of the dentist and the perspective of the economist are equally justifiable; the difficulty lies in amalgamating the viewpoints of the two professions to the satisfaction of both.

Is dentistry a free competitive market?

In a free market situation anyone, in principle, can set up a shop or office and start serving the public. But while diplomas or degrees are not needed to run a clothing store or pizza parlour, there are good reasons for not allowing all and sundry to enter the health care market

In centuries past, non-professionals in many cultures undertook a variety of dental services which these days would be regarded more or less malpractice. As access to highly educated and skilled oral health care providers has improved, the role of the lay practitioner has grown more problematic. In the old days it was natural and acceptable for certain trusted individuals in the community to adopt the right to ease people's pain and suffering. Barbers, for instance, often extracted infected teeth. Unfortunately, among the well-intentioned pain relief and other procedures, many unnecessary ones were also performed, as well as serious mistakes with sometimes fatal consequences. Gradually, legislation came to be regarded as a necessary means of safeguarding patients.

In areas of health care where the consequences of malpractice can be serious, it is obviously in the public interest to restrict practice to qualified expert professionals. However, as this limits the economic principle allowing anyone to 'set up shop', dentistry does not thus function as a true free market. Nevertheless, since it does in actuality protect the public, this limitation on the free market principle is justified.

General price theory is not directly applicable to every market, and certainly not to many aspects of dentistry; it fits the production and marketing of items such as cars and kitchenware better than activities in the health care sector. However, general price theory models can be used to describe the expected overall behavior of dental suppliers, dentists and their patients - the consumers. The application of an economic model involves a standard, against which the behavior of a population with its deviations can be studied. Such a model can generate a general view of likely expected behavior if a certain change takes place in the market. It does not mean that all people will behave as predicted, but provides an estimate of what could be expected of an individual, on average.

When studying the market for household utilities, consumer goods etc., we usually have a situation termed a free market. Free markets have some important basic differences from the market for dental services. Certain features need to be established before any market can be regarded as free. These are:

- *Free competition; people are free to both enter and leave the market as suppliers or consumers whenever they choose.*
- *Suppliers and consumers are both so numerous that if one of either of them leaves or enters the market, it has no significant effect on the actions of other suppliers or consumers.*
- *The consumer has an understanding of the product he/she wishes to purchase, and can make rational choices between alternative products.*

We see right away that the first of these features, free competition, is not fulfilled in the oral health care sector. For a start, only qualified and licensed individuals are permitted to practice dentistry. Licenses are granted by authorities who require proof of attainment of detailed qualifications before a person can even be considered for entry as a provider in the market. In addition to federal, national and even international qualifications, there are sometimes also local requirements to be fulfilled before approval is granted to practice in a given locality.

Specific qualifications, which differ from one nation to another, are justified on the grounds of protecting patients' safety and rights. All patients expect a health service professional to be well acquainted with the laws governing their rights.

On the other side of the regulatory coin, however, lies professional protectionism: when the number of licenses issued is restricted, the

availability of health care providers can be controlled. Maintaining a low density of oral health clinics means more consumers per dentist, while allowing more to practice in an area will stimulate increased competition between them. Thus, regulating the availability of licenses for practicing clinicians in an area is a device for minimizing competition. For the consumer, this lack of competition offers no benefits.

Moreover, the various professional fields within dentistry operate under different qualifications. General dental practitioners in private clinics routinely perform more or less basic procedures, whereas major work of maxillo-facial surgery, for instance, is usually only undertaken by those with a clinical specialty or sub-specialty in the respective field. So even within the dental profession some protectionism exists, since not all licensed dentists are licensed to perform the full spectrum of specialized oral health services.

Dental hygienists - auxiliaries with supplementary training - may carry out simple periodontal procedures such as curettage and scaling, in addition to oral health education. In many countries they must be licensed and can operate only under a dentist's supervision; they may not be allowed to establish their own clinics. In such cases they only work on behalf of dentists, they do not compete with them.

In addition, several countries and states in the USA permit specially trained dental technicians, known as denturists, to establish their own clinics. They offer a complete denture service to edentulous patients, but are generally not allowed to extract teeth or perform other oral health care procedures. Although this amounts to only a minor sector of dentistry overall, denturists are genuine competitors of dentists in the area of denture provision, and their services are beyond the control of dentists.

The second free market requirement concerns the numbers of providers and consumers in the market. A true free market situation assumes that providers are so numerous that if one withdraws his/her services all consumers can immediately find a substitute. This situation normally prevails in dentistry, particularly in the urban areas of developed countries, though in sparsely populated or less developed settings the entry or departure of a single service provider may affect the actions of others.

The third free market precondition, of consumer understanding of the product and the ability to make rational choices among alternatives, is far from fulfilled in dentistry. Patients do not come to a clinic asking for root

canal treatment accompanied by a course of antibiotics and followed by an MOD filling. They come for a check-up or with some specific problem in mind. The check-ups may lead to various treatments, or to none, but this decision lies predominantly with the dentist rather than the patient.

If the patient comes with symptoms, such as an aching tooth, it is again the dentist who decides on the need for X-rays and treatment, and who chooses the best combination of procedures for the desired outcome. The dentist does not offer a selection of alternatives from which the patient may choose the one he/she judges the most promising and suitable.

In this context the dentist is definitely expected to make expert decisions on the patient's behalf. Patients are assumed not to have adequate understanding of anatomy, physiology and pathology, nor to know the properties of alternative materials used in treatment. However, consumers are also assumed not to fully understand radios or cars, for example. In these markets the salesperson is expected to supply sufficient information to enable the consumer to make a rational choice between available options. Why could not this situation prevail in dentistry, too?

For most consumers, the priority difference between alternative products or services is the price. If the pros and cons of differently-priced treatments were explained to patients it would help educate them towards more rational choices, but would also undoubtedly consume extra time in the dentist's schedule. So keeping patients uninformed might be considered a facet of entrepreneurial activity.

In summary, of the three essential cornerstones of the free market on which general price theory is founded, two are severely violated in the field of oral health care. This seriously limits the applicability of general price theory models in dentistry.

There are several important differences between markets for so-called normal products on one hand, and for oral health care services on the other (Table 2.2.).

With normal products and services the average consumer tends to be knowledgeable enough to make fairly rational choices. By contrast, the potential patient seeking a health care service is not generally knowledgeable about what treatment and how much of it is needed, nor about the quality and cost options offered by available alternatives. So in dentistry the consumer effectively gives the dentist 'carte blanche' by asking for health rather than for a specific service.

Table 2.2. Contrasts between typical consumer relationship to normal products or services and dental services

	Normal Products	**Dental Services**
Consumer knowledge	good	poor
Decision to buy or utilize	consumer	consumer + provider
Deciding the quantity and quality	consumer	provider
Payer	consumer	consumer (+ third party)
Evaluator	consumer	provider

The decision to utilize (buy) a health care service is a two-stage process which begins with the initial decision to seek the service by booking an appointment. This may be for a routine annual or semi-annual check-up, or for an acute problem demanding attention.

Of course, even this first stage of the process is sometimes prompted by the provider. There may be an advertisement that catches the attention, and many dentists now operate recall systems which generate e.g. postal, telephone, SMS or e-mail reminders for patients to schedule routine appointments. However, although such inputs are initiatives from the provider, the final decision to make the appointment is solely the choice of the consumer. So at this stage the individual is a sovereign decision-maker, whether the initial impulse originated from him/her or from the provider. Once at the clinic, the decision on the treatment to be applied is based on the dentist's diagnosis and evaluation of the individual's oral health status and specific needs. At this stage the consumer becomes the patient and more or less surrenders his/her decision-making sovereignty. This contrasts with the markets for normal products, where the consumer is the sole decision-maker.

Health insurance coverage for oral health care services is becoming widespread. In many western nations dental treatments are partly or entirely subsidized by social health care programs for some or all citizens. Where

state sponsored social coverage is rudimentary or absent, many private insurance companies offer dental insurance policies. Insurance coverage and dental services subsidized by employers both improve health equity across the population, although some critics point to the tendency of such third party involvement to inflate health care costs.

Although general price theory was originally developed to describe a free market situation involving normal products, it can still be useful in analysing the economics of dentistry despite the shortcomings and pitfalls outlined above. Dentistry possesses several special features which should neither be ignored nor minimized in economic considerations. The thoughtful application of economic models can offer fresh analytical perspectives on how dentistry functions in society.

3. NEED AND DEMAND FOR TREATMENT AND UTILIZATION OF SERVICES

The 'need for dental care' can have several meanings, based on an individual's perception: their experiences, beliefs, opinions and values. In the dental profession, however, need for dental care has a rather specific interpretation.

In principle, dentists make a treatment decision according to their assessment of need on the basis of clinical status and the appropriate available treatment. Such judgement can be relied upon only against a background of proper clinical training. But most people with a need for dental care have no clinical training, and their perception of need often differs from the dentist's assessment. Over the past few decades economists have been in the forefront of discussions about the true meaning of need in this context, and how it varies according to who it is being assessed by.

A desire to maintain good oral health may form the basis of the need for dental treatment. A person without this concern will not feel the need for the appropriate treatment, and their need may only surface with toothache, swollen gums or other acute symptoms. Alternatively, it may arise gradually from prolonged dissatisfaction with stained and ugly teeth. Another typical example is periodontal disease; often a person tolerates minor or even moderate gum bleeding for long periods without perceiving the need for dental examination and treatment.

Happily, a substantial proportion of most western populations attend checkups on a regular basis - annually, biannually, or even more often. Because they are interested in preserving good oral health, their perceived need for care does not depend exclusively on the presence of problems.

Whatever the reason for seeking dental treatment, there has to be at least a minimal level of knowledge or understanding before the need for care can be focused. For a start, the person has to be aware of the existence of service providers for his/her particular problem - and indeed that the unpleasant symptoms are connected with the mouth. Lack of such basic knowledge may prevent people from perceiving the need for dental treatment. For

example, if bleeding gums are assumed to reflect a general state of poor health, the person may fail to recognize the need for dental care.

So the individual booking an appointment with the dentist is knowledgeable enough to be needing either a check-up or the treatment of an oral problem(s). People know that the dentist can help maintain their oral health or alleviate their discomfort, but they seldom have a detailed understanding of the treatment required. The specific expertise lies with the dentist who, as mentioned earlier, does not commonly share much of this knowledge with the patient. In fact the patient usually gets to learn little more than whether or not he/she needs treatment, plus the briefest outline of the procedure.

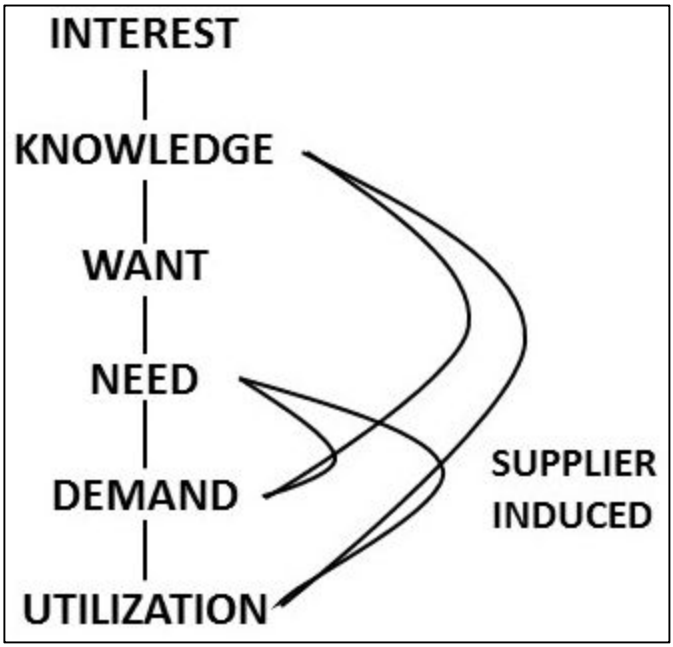

Figure 3.1. Schematic presentation of various ways in which need, demand and utilization develop

An individual with a need for care may be willing to undergo treatment. This willingness can be regarded as 'want', and generally appears after the dentist has expressed his/her opinion on the need for some specific form of treatment. People want check-ups because they are informed of the benefits,

usually by a service provider. So the 'want' to preserve an acceptable oral health status is maintained by enhanced interest and better knowledge, largely influenced by the dentist; though of course, whether he/she has played a major or minor role depends on the individual. The service provider's role in increasing the 'want' for treatment, usually termed supplier induced demand, is more thoroughly discussed later in this chapter.

Some people delay the decision to seek treatment for years. They might express their need as: 'I wish I had white teeth in a straight line'. Such wish may never evolve into active moves towards treatment. We all have wishes we know to be beyond our reach, or into which we are not ready invest the necessary time or money to accomplish. It is futile to calculate estimates of need for treatment based on people's wishes; this kind of error has occurred, particularly in connection with epidemiologic surveys.

The want for dental treatment sometimes escalates into a desire or urge for more and more. No matter how much work has already been done by one or even several dentists, the patient still wants further treatment. Any form of willingness for treatment - wish, want or desire - can be justified. In addition, need may be determined by the dentist or even by a third party such as public health authorities or an insurance company.

The subjective need can be expressed independently by the patient him/herself, or be initiated by the dentist who, by enhancing interest through more knowledge, can modify the quality and extent of the patient's need.

Need converted into action becomes demand for treatment. This should not be confused with utilization of services, since not all demand becomes actual utilization. The patient contacting a clinic (a demand) sometimes does not get an appointment because the dentist is fully booked for weeks ahead, or because available times are unsuitable. The demand for treatment may thereby evaporate.

Again, a person may feel a need for a certain treatment and demand it, only to be informed by the dentist after examination that some other form of treatment would be better, or even none at all. In these cases need has been converted into demand by the individual, but not into the action originally wanted. However, there may be utilization of another form of treatment suggested by the dentist.

Demand for dental services generally leads to utilization, which is influenced mainly by the dentist's knowledge and assessment. The patient wanting an aching molar removed makes an appointment at the clinic. On

examination the dentist suggests that a root canal treatment with a crown would save the tooth and benefit the patient more than an extraction. If the dentist is successful in modifying the patient's initial want, the utilization of services is different from the original need and demand.

Supplier induced demand has been criticized by some economists as a questionable input from the dentist. The major worry concerns the tendency of dentists to induce demand in order to boost health care costs either to the patient directly or to society as a whole - by acting as the subsidized patient's 'agent'. There is no doubt that dentists sometimes induce or enhance demand, thereby increasing costs to the patient and to society as a whole while supplementing their own incomes, but this phenomenon does have some positive influence in the health care sector.

It is also unavoidable in some cases. For example, thorough examination of a patient requesting an extraction may reveal for the first time several other teeth or conditions calling for attention which were asymptomatic or unknown to the patient. Such problems may end up needing more work than the original one. It is also desirable as well as acceptable for the dentist to inform the patient and perhaps take biopsies if he/she suspects or discovers a precancerous or cancerous lesion in the mouth, for example. By any standards, supplier induced demand in such cases promotes necessary action.

In a case where the dentist detects infected teeth which could cause severe infection and further erode the patient's health but without being life-threatening, most people would approve of the dentist proposing to treat the condition. But where does the boundary lie between clear benefit to health despite the extra cost on one hand, and expensive further procedures giving questionable health benefits on the other? How far should the dentist encourage the patient's willingness to enhance his/her health in the light of the magnified costs involved? In truth, no boundary or cut-off point exists above which a dentist's supplier inducing activities can be labeled as unjustified. To the clinician, all services designed to improve a patient's health status may seem justifiable.

The Hippocratic Oath obliges health care personnel to act in the best health interests of their patients. In this perspective supplier induced demand is not necessarily negative, and can even be seen as a positive or expected input from the dentist.

Of course, supplier induced demand can be abused by dentists to supplement their income while achieving only marginal improvements in their patients' health. It is important for health care providers not to ignore such abuse and justified criticism. But generalized condemnation of all supplier induced demand in dentistry without specifying the activity referred to is not appropriate. It should also be born in mind that it may be economically advantageous for the patient to increase oral health care utilization today in order to enjoy lower costs and better health at a later stage of life.

Equity and distribution

The issue of equity in health care is related to various forms of need. Comparative need is always present, because there are always some people who receive treatment while others of similar health status do not.

Lack of equity in health care is a universally recognised problem. Equal access to care formed the philosophical basis of the development of social security systems in many European nations, e.g. Germany, the Netherlands and the Scandinavian countries. In the USA the Medicare and Medicaid programs evolved from the idea of improving access to care for those unable to afford the full fees themselves.

Equity can be regarded as a background target - the direction to aim for when policy is being formulated. Equal access to dental health care, equal utilization of services and equal inputs of dental resources for all citizens are of course ideal goals which are impossible to achieve completely; certain individuals and groups will always remain outside the system for one reason or another.

In many societies income level is a prime cause of the unequal utilization of dental services; low earners use oral health services less than higher earners. Differences based on social class and culture are also common worldwide, and the availability of oral health services varies across every society and country.

Even if it were possible to obtain accurate knowledge of treatment needs and demands across a whole society, equal access to care and distribution of treatment would be virtually impossible to organize. Suppliers of services have the freedom to choose the locality and population they wish to serve. To minimize geographical imbalances in a distribution of services, for example, incentives can be offered to providers for establishing clinics in

areas where services are absent or inadequate for the demand. But the supplier retains the final say in where he/she wishes to practice.

Economic theory predicts that distribution differences will diminish as the number of providers increases. When one area becomes saturated with dentists, newcomers will have to find another where excess demand still prevails and the potential exists to attract needy custom.

Unequal distribution of services is maintained as long as the number of providers remains low enough for them to choose and practice successfully in the most attractive areas. Conversely, more equal distribution of services and access to them can be promoted by increasing the overall number of providers.

Political views strongly influence how people perceive alternative ways to tackle problems of equity and distribution in oral health care. Some suggest that these can be diminished by encouraging the operation of free market economics in dental practice, whereas others argue that the best outcomes can be achieved by interfering in the function of the market. Nevertheless, inequalities and distribution problems will persist to some extent whatever measures are taken.

4. CONSUMER BEHAVIOR

Demand for dental health

Throughout our lives we have a need for goods and services such as food, clothing, housing, transport, and so on, although the number of our demands can vary greatly from day to day. As far back as Maslow's hierarchy of needs theory health in general was ranked highly, but oral health may not have such a high priority among many people. And certainly in everyday lives oral health and oral health care are not among the most frequently demanded.

Everybody wants to be as happy as possible. In other words, they want to maximize their utility. However, although we all know for example that smoking is damaging to health, many people persist with the habit. These individuals have decided that smoking gives them more pleasure than the expectation that they would enjoy a healthier lifestyle as non-smokers. The alternatives we choose depend on the relative value we place upon having or not having them. In this context of individual valuation, health care services have to compete with thousands of other options or 'attractions'. People certainly want to be healthy, but not at the expense of all or most of life's pleasures. How many of these pleasures a person is willing to relinquish in order to regain and/or maintain good health depends on their personal valuation of them in relation to the importance of their health.

In practice we weigh the pros and cons of each option and try out combinations of them to achieve the highest level of utility. Since a healthy lifestyle is not, for most people, their sole priority, there is always a tradeoff between investing resources of time and money in health promoting activities, or elsewhere.

The demand of the patient is generally for an improvement in dental health, not for specific treatment procedures. As decisions on laboratory tests, X-rays, drug prescriptions etc. are often left entirely with the dentist, it is justifiable for him/her to be regarded as the patient's agent.

Booking a further series of appointments implies satisfaction with previous treatments and trust in the dentist. This satisfaction amounts to approval of

the clinical treatment received, the behavior of the dentist on both the professional and personal levels, and the cost of the treatment. It also implies that the patient accepts the dentist as an agent on his/her behalf.

In the early 1970s the economist Grossman examined demand for health issues. He based his models and arguments on the assumption that individual consumers receive enough information to make rational choices about their personal health, and even about their future health. Much of the health economics literature since has been strongly influenced by Grossman's models and pioneering work.

However, there are good reasons to doubt Grossman's assumption of the 'rational' health care consumer. Dental patients, for instance, are more or less ignorant of their oral health status, as well as of the pros and cons of various treatment options.

Grossman also regarded health as an investment. In health care generally, dentistry included, action taken to support or improve health status can be seen as an investment. This is particularly the case in dentistry, where attendance is based more on routine appointments and maintenance treatment than in general medicine. Most consumers of dental services attend on a regular basis to avoid future problems, or at least to minimize their impact and inconvenience. However, when an individual does not consider routine dental care to be a profitable investment the implication is that he/she accepts the likelihood of future problems along with the costs involved.

A major factor affecting demand for services is their price. In Figure 4.1., curve X1 describes individual A's willingness to demand dental services at varying prices. The curve is actually constructed from an infinite number of points showing how the amount demanded alters as the price changes.

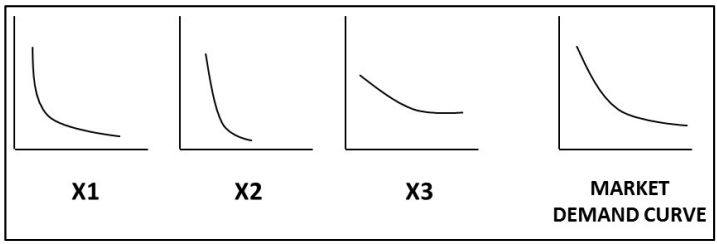

Figure 4.1. Individual demand curves combine to form a market demand curve

Thus at lower prices the individual is willing to demand further and more extensive services. Demand curves differ from one product to another, as well as between individuals. Curves X2 and X3 represent the demand curves of individuals B and C for the same product. When demand curves of a sufficient number of people are combined, an overall market demand curve can be drawn. This shows how the average consumer in that market reacts to price changes.

Each individual has a unique pattern of demands for the range of products available in a market, and demand curves can be constructed for each item. The slope of the curve reveals whether the product is considered a luxury or a necessity. In Figure 4.2. curve A shows how the consumer reacts to price changes in a luxury product. A curve of this type is termed an elastic demand curve, where the market price is a strong determinant of the quantity in demand; even a small price increase will significantly depress demand for the product.

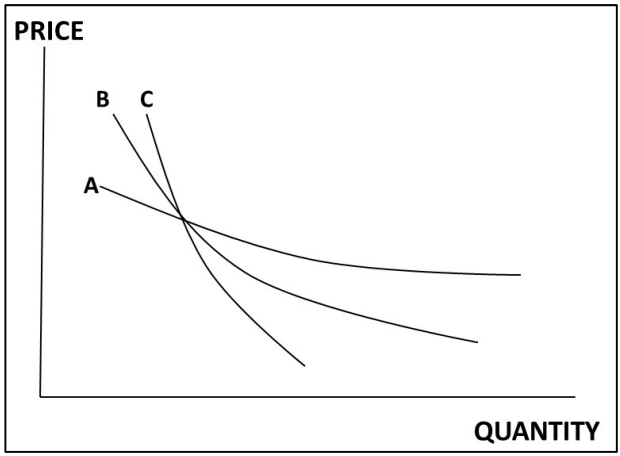

Figure 4.2. Relationships between price and demand for three products

Curve B describes demand in a case of more inelastic demand, where the product B is considered by consumers to be more necessary than product A. Equal price fluctuations in products A and B will cause less change in demand for product B than product A. Curve C represents a product (or service) for which there is almost totally inelastic demand - emergency treatment would be a typical example.

There is no single market demand curve for 'dental health' or 'dental appointment'. Even if the cost of extraction or other procedures related to pain relief were to double, the demand for them by toothache sufferers would persist. On the other hand, aesthetic treatment such as adult orthodontics with comprehensive bridge work can be assumed to be more elastic. Increasing the price would reduce demand because the proportion of people with doubts about the benefits of the service in relation to its cost would rise sharply.

Demand curves can be interpreted in two ways, both valid and worthy of consideration. Firstly, they can show how willing consumers are to purchase a product at a certain price. Secondly, the relationship between price and the quantity demanded indicates the maximum price consumers are willing to pay for a given quantity of the product.

Demand curves are dynamic; the slope and position of a demand both alter with time, because the quantity of a product demanded does not depend on price alone. However, other involved factors include taste and preferences. Such external factors may well have a definite influence on the slope of a demand curve. One example is orthodontic treatment, which has grown in demand over recent years. Earlier regarded mainly as a luxury, orthodontic treatment is today much more likely to be seen as a necessity.

Nevertheless, a product's price and the demand for it probably remain the major determinants of the shape of the demand curve. As consumers' income level rises they have extra available money and are thus willing to buy more of the product at the old price. This shifts the demand curve to the right (Figure 4.3.). However, as the old demand curve DI moves to the new position D2, it is important to note that the old slope stays the same. Conversely, a decrease in income will shift the demand curve to a new position further left, D3. Rising income will allow individuals to invest more money in products they consider beneficial to themselves, i.e. providing utility.

In the context of dentistry such a shift would manifest in more frequent check-ups, for example.

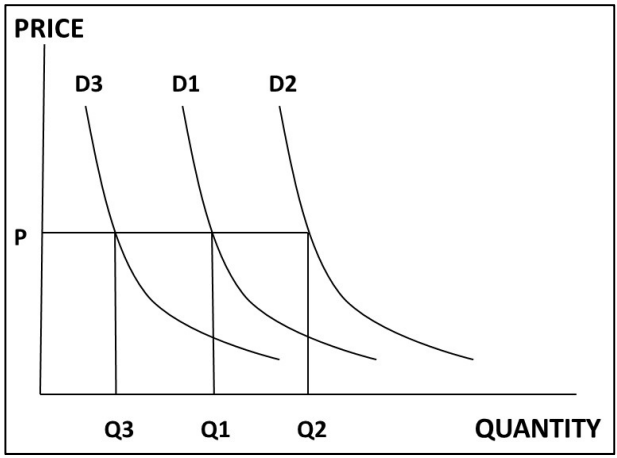

Figure 4.3. Shifts in the demand curve

Opportunity costs

Resources are scarce and people have to make choices every day. Let us assume that a treatment plan formulated by a dentist requires the patient to invest $1000. If the patient agrees to go ahead with the treatment this sum of money cannot be used for any other purpose, such as buying clothes. So the utility the person would have gained from buying clothes with this $1000 instead of buying dental treatment is the opportunity cost of investing that money. Similarly, any utility that would have been gained by investing that sum is the opportunity cost of the treatment. Of course, the investment of $1000 does not by itself tell us much about the importance or relative value of the investment. But when we know what other opportunities for that individual were lost because the money was allocated to the dental treatment, we gain a much better picture of the utility that person received from his/her investment.

Oral health care is only one among the many valued factors in people's lives. If there becomes an urgent need to fund home renovations, for example, this need makes the opportunity cost of the $1000 required for dental treatment higher than if no need for renovations existed. For each person the relative gain achieved by investing a certain sum in oral health services at a given time may be very different from that at another moment.