Chapter 2

Literature review

Introduction

The review is divided into 7 sections. Section 2.1 presents a general review of health promotion, health promotion strategies, five approaches to health promotion, and evaluation of health promotion. Section 2.2 presents an overview of a health promoting schools, health promoting school projects in Thailand, and how to tackle healthy eating in schools with the health promoting school concept. Section 2.3 reviews the development and implementation of health policy, with a focus on technique. Section 2.4 presents an overview of diet and dental caries. The next section presents a general review of dietary assessment. Section 2.6 presents an overview of action research. The last section gives a summary of the literature review.

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2.1 Health promotion

In the past, more specific means was used to prevent disease because specific microorganisms were given priority in disease. The World War I provided the first large scale evidence of the poor health status of British people. Preventing and

controlling communicable diseases were not enough. Health problems were often the results of chronic conditions. Therefore, the idea of specific disease prevention was complemented with approaches to change long term behaviours (Butler, 2001). The broader approach to prevention was highlighted by the Lalonde report "A new perspective on the health of Canadians". The government shifted its emphasis away from treatment to health promotion. This was a beginning of the new public health and health promotion (Naidoo & Wills, 1994; Jones, 1997; Butler, 2001; Daly *et al.*, 2002). The World Health Organization was the principal mover in the field of health promotion on the international level. The Declaration of Alma Ata was formulated by the representatives of many countries at the meeting in Alma Ata in 1978. This declaration stated that the primary health care was the key to attaining health for all (Butler, 2001).

The Ottawa conference was the first international conference on health promotion. This conference produced a charter which has had a significant impact on health promotion until the present (Green et al., 2000; Butler, 2001). According to the Ottawa Charter, health promotion is the process of enabling people to increase control over and improve their health. Health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to personal well-being (World Health Organization, 1986). The definition of health promotion based on the Ottawa Charter is broad, encompassing health education, public policy change, environmentalism, and community action. It indicated that health promotion involves political, social and economic change. Health promotion is everybody's business at every level (Naidoo & Wills, 1994; Jones, 1997). An important feature of

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the Ottawa Charter is the enthusiasm it generated for building public health policy instead of concentrating on health education. The other important principle to come out of the Ottawa Charter was that empowerment of individuals and communities should be a major focus of future work. To bring this principle to fruition community action must be strengthened, decision-making should be facilitated by creating supportive environments, and there needs to be a reorientation of health services (Jones, 1997; Tones, 2001). There is a challenge for a health worker to think about 'how to make a physical and social well being', besides focusing on individuals. Working with groups is more challenging than on individuals (Jones, 1997).

The WHO launched further conferences on health promotion at Adelaide (1988), Sandsvall (1991), Jakarta (1997), and at Bangkok (2005) (World Health Organization, 1998a; World Health Organization, 2005). At each World Conference on health promotion, actions and principles were identified.

The Adelaide Conference in 1988 started from the position that health is both a fundamental human right and a sound social investment. Participants at that conference proposed that their governments promote health through linked economic, social and health policies. The conference identified four key priority areas for healthy public policy: improving the health of women, food and nutrition, tobacco and alcohol, creating supportive environments.

The next conference at Sandsvall (1991), highlighted the essential link between health and the physical environment. Delegates grouped strategies for environmental change

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in support of health into seven headings: policy development, regulation, reorientation of organizations, advocacy, building alliances/creating awareness, enabling, mobilizing/empowering.

The Jakarta Conference (1997) was held during a period of major worldwide economic and political changes. Its objectives were to review and evaluate the impact of health promotion, identify innovative strategies to achieve success in health promotion and to facilitate the development of partnerships in health promotion to meet the global health challenges. The five strategies set out in the Ottawa Charter remained essential to successful health promotion efforts, while clear evidence showed that comprehensive approaches to health development are the most effective.

The Bangkok Conference (2005) was held to affirm that policies and partnerships to empower communities, and the improvement of health and health equality, should be at the centre of global and national development. The four key commitments proposed in the Bangkok Charter for the promotion of health should be: central to the global development agenda, a core responsibility for all of government, a key focus of communities and civil society, and a requirement for good corporate practice.

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2.1.1 Health Promotion Strategies:

There is a variety of strategies to build health promotion. However, the principles of health promotion are an extension of the strategies developed in the Ottawa Charter. The outline of these strategies that are important for health promotion (World Health

Organization, 1986; Jones, 1997; Watt, 1999; Butler, 2001; Daly *et al.*, 2002). They are:

2.1.1.1 Build healthy public policy

Health promotion goes beyond health care. It puts health on the agenda of policy makers in all sectors and at all levels, directing them to be aware of the health consequences of their decisions and to accept their responsibilities for health. Health policy requires the identification of the barriers that prevent the adoption of healthy public policies in non-health sectors and of ways of removing them. The aim must be to make the healthier choice the easier choice for individuals and policy makers. A public policy can influence health by creating healthy environments. It provides a legislative framework for environmental change. One example of the effects of developing healthy public policy on health is research project in Northern Ireland (Freeman *et al.*, 2001) that created the Boost Better Breaks (BBB) school-based policy which aimed to reduce snacks high in fat or sugar for primary and preschool children. After several years of that scheme, children at BBB schools appeared to have more sound teeth than children at nonparticipating schools.

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2.1.1.2 Create supportive environments

Societies are complex and interrelated. Health cannot be separated from other goals. Health promotion generates living and working conditions that are safe, stimulating, satisfying and enjoyable. The environmental factor can make change conducive to better health. As described above, the schools with BBB had created healthy

environment such as provision only milk and fruit at break time. This supportive environment for healthy eating could lead to be healthier lifestyle and conducive to health.

2.1.1.3 Strengthen community actions

Health promotion works through community action in setting priorities, making decisions, planning strategies and implementing them to achieve better health. At the heart of this process is the empowerment of communities, community ownership and control of their own efforts and destinies. Thus, the community will make the decisions in defining and implementing their own projects and professionals will assist and support them in this process. This approach starts with the community's concern and then takes action on their own. It can lead to sustainable improvement in health. The problems of this approach which health promoters should be concerned with are a long-term approach, the difficulty to evaluation, and the potential conflict that may arise within communities because of setting priorities and their solutions.

2.1.1.4 Develop personal skills

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Health promotion supports personal and social development through the provision of a) information, b) education for health, and c) enhancing life skills. These strategies help people develop the skill to make healthy choices by themselves. Health education can be considered as a strategy in health promotion because health education aims to help individuals and communities with knowledge, attitudes and

skills to improve health. For example, a study in Taiwan used health promotion counselling which emphasised a subject motivation in changing the lifestyles and physiological indicators of overweight adolescent nursing (Chen *et al.*, 2001). The researchers found that such a strategy can enable subjects to adopt healthier lifestyles such as reducing high fat diet consumption and more exercises.

2.1.1.5 Reorient health services

Individuals, community groups, health professionals, health service institutions and governments must all work together towards creating a health care system that contributes to quality health. There is a need to shift away from treatment and curative service to promote and prevent disease. In addition, the training and education of health professionals need to focus on prevention and promotion.

When considering the definition of health promotion, there are three important elements (Daly *et al.*, 2002):

1. Determinants of health: health promotion focuses on the determinants of health: socioeconomic factors, environmental factors, and individual related health behaviour. Actually, health is influenced by the complex array of factors beyond individual factor. It is therefore to promote all of factors rather than only individual factors.
2. Working in partnership: community participation is an essential element of health promotion. Within this concern, the professionals have role in enabling health promotion within community.

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3. Strategic action: a strategic approach is required for the development of healthy policies. It should be based on an assessment of local need and resources.

2.1.2 Differing approaches to health promotion

The five approaches to health promotion were outlined by Ewles and Simnett in 1985 (Jones & Naidoo, 1997) and then further refined. These approaches ranged from the medical approach which encourage patient compliance and persuade people to prevent ill-health across to a societal change approach which focus on action to change physical and social environment. The approaches are (Naidoo & Wills, 1994; Jones & Naidoo, 1997; Daly *et al.*, 2002):

1. Medical or preventive approach: This approach focuses on activities which aim to reduce morbidity and premature mortality. This approach adopts a very top-down approach. This kind of approach seeks to increase medical interventions which will prevent ill health and premature death. The medical approach is conceptualised around the absence of disease. It does not seek to promote positive health. Moreover, it ignores the social and environmental dimensions of health. In addition, the health decision by the people is removed, and instead emphasises medical knowledge. The preventive approach requires a rationale from epidemiological evidence. The evaluation of this approach is based on a reduction in disease rates and associated mortality.

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2. Behaviour change approach: This approach aims to encourage individuals to adopt healthy behaviours as a key to improve health. It is assumed that people can make improvements to their health by changing their lifestyle and the provision of information will lead to a sustained change in behaviour. Many health workers educate people about health by providing health information and counselling. The health promoter will encourage an adoption of 'healthier lifestyle'. This approach uses one-to-one advice and mass media campaigns as a method. The desired changes in lifestyle are determined by the professionals. The evaluation of this approach would be simple. It focuses on comparison changing between pre and post intervention. However, there are two problems to be concerned regard to the change of behaviour: change may become apparent over long period, and it may be difficult to isolate which change as attributable to the intervention.

3. The educational approach: the purpose of this approach is to provide knowledge and information, and to develop the necessary skills in order to make an inform choice about their health behaviour. This approach differs from the behaviour change approach in that it does not set out to persuade or motivate change in particular direction. The health worker will provide information to help individuals to make decision about their behaviour. It includes providing opportunities for individual to share and explore their attitude to their own health. Individuals can choose any choice they prefer. Group discussion and one-to-one counselling can be useful to enable people to explore the basis of their beliefs. The evaluation of this approach is to

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measure knowledge increase. However, it is doubt that if information alone is sufficient to change behaviour and guarantee that the individual will do so.

4. Empowerment (Client-centred approach): This approach helps people to identify their own concerns and gain the skills and confidence to act upon them. It is based on a bottom-up strategy. By using this approach, the health promoter becomes a facilitator. The health promoter works as a catalyst not doer in health promotion programme. The professionals need to have skills in negotiation, advocacy, and networking. The empowerment is divided into two: self-empowerment and community empowerment. To promote health, self-empowerment is based on counselling and aim at increasing people's control over their own lives while community empowerment aims to increase people's power to change their "social reality". All stakeholders are empowered to be able to change the world about them. Evaluation of this approach is problematic because of long term process. In addition, it is difficult to detect that any changes are only due to the intervention.
5. Social change approach (radical approach): This approach aims to bring changes in the physical, social and economic environment which will have the effect on health. To achieve this aim, the policy and political support are essential methods. In addition, a wide consultation and commitment are needed within this approach.

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The framework offers a clear and useful account of different ways of thinking about health promotion. However, it does not tell us much about what might motivate health workers to select one approach rather another (Jones & Naidoo, 1997).

Moreover, the health workers can use combinations of approaches in a community health project rather than select only one approach because each of the approaches described has strengths and weakness (Jones & Naidoo, 1997; Daly *et al.*, 2002).

2.1.3 Evaluation of health promotion

Evaluation was defined as *'the comparison of an object of interest against a standard of acceptability'*(Green & Kreuter, 1991). The standard of acceptability is identified in written objectives. The comparison must be based on data which collected by the process of measurement (Green & Kreuter, 1991; Butler, 2001). The evaluation can be divided into two (Butler, 2001): evaluating individual and evaluating programmes. A distinction between evaluation of programme and evaluation of individuals is the purposive of those evaluations. The evaluation of programme aims to evaluate a programme against the goals and objectives of that programme while the evaluation of individuals determines the progress of individual learners against preset standards. Many health promoters are required to evaluate programme more than individual programme. Monitoring is an integral part of a formative evaluation (Peberdy, 1997). Evaluation is wider than monitoring: it not only gathers information but also involves judgments about value. Decisions about the focus of the intervention will depend on the resources and funding available, the underlying questions and the criteria guiding the evaluation (Peberdy, 1997).

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2.1.3.1 Levels of programme evaluation

An evaluation of programes consists of three levels of evaluation (Green & Kreuter, 1991; Naidoo & Wills, 1994; Peberdy, 1997; Butler, 2001): diagnostic evaluation, formative evaluation, and summative evaluation of impact and outcome.

1. Diagnostic evaluation is a component of need assessment. Its function is to analyse health problems and issues to determine what the most need knowledge, attitude change, behaviour change, or skill development. The results of diagnostic evaluation provide a baseline for comparison.
2. Formative evaluation or process evaluation is the ongoing evaluation while the programme is being developed and implemented. It focuses on the functioning elements of the programme. This evaluation helps to improve the programme and its management.
3. Summative evaluation is carried out on two levels: impact and outcome.
    a. Impact evaluation is based on measures of the immediate or short term effects of the programme; it is used to determine if objectives are met.
    b. Outcome evaluation is based on measures of the long term changes that come about as a result of the programme; it is used to determine if programme goals have been achieved.

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2.1.3.2 Oral health promotion outcomes

The outcome measures used in the evaluation of oral health promotion need to be appropriate to the intervention as well as assess the impact and effect of the

intervention. The measure of altering dmf/DMF score is not enough to indicate the success of such intervention (Watt *et al.*, 2001). To evaluate of health promotion activities, an outcome evaluation model has been proposed by Nutbeam in 1998. Then his model has been adapted to fit an oral health promotion (Fuller, 1999; Watt *et al.*, 2001). The model is based on the idea that health promotion may involve a range of different actions which require specific types of evaluation measure and timescale is required to show the results of any health promotion action which achieve changes in health status (Watt *et al.*, 2001). The model outlines a range of outcomes: health promotion outcomes, intermediate health outcomes, and health and social outcomes, related to various health promotion actions (education, facilitation and advocacy) which each of outcomes are described below (Fuller, 1999; Watt *et al.*, 2001):

Health promotion actions include education, facilitation and advocacy. Education defined as any opportunities for learning that improves health literacy. Facilitation defined as the action taken in partnership with individuals and social groups, to mobilise social and material resources for health. Advocacy are the actions taken on behalf of individuals and/or communities to overcome the structural barriers to the achievement of health.

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Health promotion outcomes assess the intermediate impact of any health promotion activities. Health literacy expresses the cognitive and social skills necessary to gain access to understand and use information to promote and maintain health. It includes measures of empowerment. Social influence and action include the mobilisation of human and material resources in social action to overcome structural barriers to health

and to enhance the control of social groups over the determinants of health. Healthy public policies and organizational practices include outcomes such as policy statements, legislation, regulations, resource allocation, and organizational practices. These are important means to create environments which are supportive to health.

Intermediate health outcomes are used to assess the key determinants of health. Personal behaviour which provides protection for disease or increase risk of ill health refers to healthy lifestyles. Effective health services defined as the access to and appropriate use of health services. Healthy environments represent features of the physical, economic, and social environment which can have impact over health, social outcome and healthy lifestyles.

Health and social outcomes include quality of life, functional independence, social capital, and equity are the most outcomes of health interventions. The conventional disease and health status measures are also included.

2.2 Health-promoting school (HPS)

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The health-promoting school (HPS) concept, emerged and spread widely during the late 1980s with support of the World Health Organization (WHO) (Smith *et al.*, 1992; Lynagh *et al.*, 2000)

Nowadays, the health promoting school concept is internationally accepted as a strategy to promote health in many countries (World Health Organization, 1998c;

Suwan *et al.*, 1999; Lynagh *et al.*, 2000; Marshall *et al.*, 2000; Nader, 2000; Rissel & Rowling, 2000; Rowling & Rissel, 2000; Moyses *et al.*, 2003)

The World Health Organization describes the HPS as *"a school that is constantly strengthening its capacity as a healthy setting for living, learning and working"* (World Health Organization, 2002). WHO also has defined the health-promoting school (World Health Organization, 1998c; World Health Organization, 1998d; World Health Organization, 1998e):

- *Fosters health and learning with all measures at its disposal.*
- *Engages health and education officials, teachers, students, parents and community leaders in efforts to promote health.*
- *Strives to provide a healthy environment, school health education and school health services along with school/community projects and outreach, health promotion programmes for staff, nutrition and food safety programmes, opportunities for physical education and recreation and programmes for counselling, social support and mental health promotion.*
- *Implements policies, practices and other measures that respect an individual's self esteem, provide multiple opportunities for success and acknowledge good efforts and intentions as well as personal achievements.*
- *Strives to improve the health of school personnel, families and community members as well as students; and works with community leaders to help them understand how the community contributes to health and education.*

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In addition, WHO has defined the concept of school health programmes as to provide guidance to policy-makers, educators and health professionals. However, it must be recognised that each school has its own unique strengths and constraints and should begin building its programme from its own particular strong points (World Health Organization, 1997). For creating a health-promoting school, requires the strengthening of school health programmes.

The World Health Organization (1997) suggested that the school health programme should consist of three major components;

Environment

- A physical, psychological and social environment that is developmentally adapted and culturally appropriate and that enables students to achieve their potential
- A healthy organizational culture within the school
- Productive interaction between the school and the community.

Services

- Establishing referral networks extending beyond the school are essential.
- Nutritional and food safety services.
- Counselling, psychological and social services.
- Safe water and sanitation services.
- Health promotion services for staff.

Education

- Academic skills and knowledge development.
- Health and nutrition education.

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- Life skills education.
- Staff education through training and development of school personnel.

The school is particularly attractive as a setting for health promotion for a variety of reasons. Health promotion teams can reach a large proportion of the child population for many years, because the majority of the children attend school regularly. Besides that, they spend most of their day in school (Naidoo & Wills, 1994; Parcel *et al.*, 2000). In this setting teachers can provide leadership opinion, role-modeling reinforcement, and feedback for each student, and can monitor student's progress and select appropriate classroom activities (Parcel *et al.*, 2000).

In order to help people to create schools that are health promoting, WHO produced an "Information series on school health" (World Health Organization, 1998e; World Health Organization, 1998d). One of those series is "Local action: Creating health-promoting schools" which provides guideline and tools for generating ideas and developing action plans by local communities (World Health Organization, 1998c). By using the Local action manual, a much larger group of supporters and support from the community are needed for success. The building of local support starts with two important actions: (1) sharing ideas and (2) example about what a health-promoting school is and what it does. These two actions can help people identify opportunities to promote HPS concept. Then, the school health team and a community advisory committee should be established in order to take action about health promotion. The next task is to gather all information about the status of health programmes and health problem in school and local area. All that information can

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lead to making plans for changing or improvements. Following the suggestions in the manual offers a way for everyone in the community to create a health-promoting school.

Regarding a health-promoting school research, St.Leger and Nutbeam (St.Leger & Nutbeam, 2000) found that well-designed researches on the relative cost-effectiveness of the interventions are needed to plan and implement the HPS concept. In addition, little is known about how the HPS can be an organising framework into schools and the effects of such interventions on student knowledge, skills and behaviour. A related suggestion with how the HPS can be a framework was building a school healthy policy. Such policy was found to be major aspect for organising all activities of health in the school (Marshall *et al.*, 2000) because action of health was often taken when direction, rationale, and justification were provided by relevant policies. However, the most important point to be concerned for creating a health-promoting school is building a large collaboration with other sectors such as education sector, health sector, own community, and parents (World Health Organization, 1998c; World Health Organization, 1998b; Marshall *et al.*, 2000; St.Leger & Nutbeam, 2000; Shi-Chang *et al.*, 2004).

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By using the HPS approach O'Dea and Maloney (2000) used principles of health-promoting schools to solve problems about eating and body image problems in children and adolescent. A new curriculum was developed using ideas from students, teachers, parents, school staff, and community leaders to focus on body image issues instead of eating disorder. Consistently, the school staff reconsidered their use of

negative phrases about diet and changed to use a more positive language. Moreover, training about eating and body image problems, referral systems, and treatment among school staff was established. This study revealed that using a health-promoting school concept can provide an efficient and effective way to approach the problems. The other study in China (Shi-Chang *et al.*, 2004) also used HPS concept as a framework for creating a health-promoting school. Many health promotion activities were conducted: school-based working groups, nutrition training for school staff, distribution of materials on school nutrition, nutrition education for students, nutrition and health contest, school-wide health promotion efforts, outreach to families and communities. The results of this study showed that knowledge, attitudes and behaviour of students, parents and school staff about diet and nutrition improved significantly from baseline to evaluation. Mukoma and Flisher (2004) evaluated nine health-promoting schools. They found that there was positive development in those schools. To facilitate the health promoting activities, school policies and organisational structure were changed. The school policy was needed to support the development of a health-promoting school. In conclusion, there were evidences that a health-promoting school has some positive influences on health behaviour of school members.

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2.2.1 Health-promoting school projects in Thailand

Since the Inter-country Consultation on Health-Promoting Schools Meeting held in Bangkok in 1998, the Ministry of Public Health, Thailand has set up a Committee for National Health-Promoting Schools. In 1999, the Committee proposed a resolution

to develop every school in Thailand to be a health-promoting school (Chaisakul & Khannakham, 1999).

The Health Department, Ministry of Public Health launched "Guidelines for Health-Promoting Schools". That document included sections on a) the concept of the health-promoting school based on WHO strategies, b) research implementation, c) monitoring of implemented programmes and d) evaluating the process of becoming a Health-Promoting School (Department of Health, 1998; Dental Health Division, 2002). To facilitate collaboration between educational, community and health sectors, a handbook "Towards Health-Promoting Schools" was published. The handbook was distributed to each local committee for promoting healthy schools, which were established in every community (Department of Health, 1998).

Suwan and others (1999) analysed existing and potential resources for school health programmes at various levels which could support the development of health-promoting schools in Thailand. They found that it is necessary and significant to improve the health-promoting school programmes of the country so they can more effectively meet the needs of students and communities. The data revealed that one of the urgent needs is establishing the precise health promotion policies at every level and that policy implementation was important for developing health-promoting schools in Thailand.

In 2002, the government declared "A Golden Year of Health Promotion for All Thais." Schools were one of the main targets. This declaration proposed that at least

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60 per cent of schools across the country would become "health-promoting schools" and these schools would be centers where pupils and communities would promote health. After this declaration, the Department of Elementary Education, the Health Department and the Office of the National Primary Education Commission collaborated and established the health-promoting school project across the country. Nan province, in the north of Thailand, conducted a seminar on the HPS concept. This seminar discussed the progress of HPS projects and policies in Nan province. The report of the Nan Province Public Health Office indicated that the projects' strength was the good collaboration between government and community. However, there was no monitoring system, policies were unclear, and there were no specific criteria for health-promoting schools (Nan Province Public Health Office, 2002). This report suggested the need for greater collaboration between local and national authorities. Consistency with the study in Phitsanulok province (Tanakhan, 2002), the lack of co-ordination between school staff and community in building the policy and implementation were found. At the national level, the evaluation of health-promoting school projects during 1998-2001 (Kramomtong *et al.*, 2003) showed that there was a lack of co-ordination between health sector and educational sector in implementing the health-promoting school projects. In addition, the educational sector thought this project was responsibility of health sector. Thus, it is important to involve all stakeholders in building the health-promoting school at the beginning in order to make the ownership of the programme and sustainability.

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There were some projects launched by other agencies, such as the "Promoting Healthy Community and Environment through School Actions" project hosted by

Mahasrakham University and the World Health Organization. The project's aim was to explore the establishment of a school-community-based health and environment (H&E) monitoring programme in Thailand. The study sites were in six schools located in Khon Kaen, Mahasrakham and Roi-Et provinces. The school-community H&E activities introduced by this project basically showed promising success through a school-based initiative. The primary contribution to the project's success was the active involvement of 18 teachers from six schools, who together volunteered to develop three draft H&E guidelines. These drafts were the first H&E handbooks ever produced in Thailand. All the teachers who used the draft booklets, even though they felt that H&E topics were quite new to them, were satisfied with these drafts. These handbooks helped them to create classroom and outdoor/community activities. On the student side, most students liked H&E programmes as they allowed them to explore various practical activities. During the last phase of the project, three schools became familiar with H&E, and extended some H&E activities to nearby communities, for example, refuse disposal, and eliminating insect breeding places. The results suggested that the H&E programmes could establish a link between school and community (Mahasrakham University, Undated). That study emphasised that teachers were the only ones involved in the development of the activities. There was a lack of involvement from students, parents and the community. To develop a guidebook for a school, all of the stakeholders such as students, teachers and communities should participate.

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Many schools also have launched the health-promoting school project such as Baan Tung Noi school in Phitsanulok province. Various activities has been initiated for

example, school encouraged and involved family members and community in supporting school meal. In addition, school has established a plan of health promotion activities for students and staffs. All these activities aimed to promote good health for all stakeholders. After the implementation, all activities were evaluated by using questionnaire. They found that the collaboration in implementing and planning health promotion programme between community and school staff were categorised and scored as high group. It showed that the project that involved all stakeholders can build the high level of participation (Tanakhan, 2003).

Thai authorities have launched several projects to advance health-promoting schools. But no practical programmes have yet been developed. In addition, traditional Thai administration has had a top-down approach, even in health issues. Consequently, there have not been many sustainable programmes to promote health, especially oral health.

2.2.2 Healthy eating in schools: How to tackle it with health-promoting school.

Healthy eating in school is an essential aspect for developing a health-promoting school (Centers for Disease Control and Prevention, 1996; World Health Organization, 1998b; World Health Organization, 1998d). In addition, nutrition can be an entry point for promoting health in school because it is important for both education and health (World Health Organization, 1998b; Shi-Chang *et al.*, 2004). Therefore, many agencies developed guideline, strategies, and information for developing healthy eating in school (Centers for Disease Control and Prevention,

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1996; World Health Organization, 1998b; Department of Health, 2002; Lowden & Schlapp, 2002; Centers for Disease Control and Prevention, 2003; Stillman-Lowe, Undated). These documents provide helpful ideas and guidelines for the reader to create healthy eating in school.

Nutrition interventions might be integrated within various components of a health-promoting school such as school health education, healthy school environment, school health services, nutrition and food programme, community and family involvement and outreach, physical exercise, counselling and social support, and health promotion for school staff (World Health Organization, 1998b). The intervention should start with small changes that are possible because schools can not have the resources to integrate nutrition interventions into all components at one time:

- *School health education*: health-promoting schools should be designed to provide knowledge, attitudes, beliefs and skills which are needed to make informed decision, as well as practice health behaviours and create conditions that are conducive to health. In addition, the selection of an educational method should be appropriate to influence such designed education. However, the teacher is an important factor in a successful school health education programme. Thus, all teachers need to receive accurate training and information to effectively address health and nutrition in the school health education.
- *Healthy school environment*: nutrition related aspects of a healthy environment can be integrated into a health-promoting school. For example, providing clean water and safe food services, appropriate healthy food

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choices, and pleasant eating environment, as well as gaining cooperation with outside vendors to offer nutritious food choice. The psychosocial environments are also important to be integrated into a health-promoting school, for example teacher role models can encourage students to follow a healthy way of life by demonstrating healthy eating.

- *School health services:* school staff can be responsible for first aid and caring for individuals' health and nutritional status. Their roles include screening for indicators of health status, providing some treatments such as micronutrient supplements, referring to other nutritional services, and supplying health and nutrition information to help students make healthy decisions.
- *Nutrition and food programme*: a health-promoting school can provide meals or micronutrients that help children who are not adequately nourished. For example schools provide lunch and/or snacks at reduced price or free of charge.
- *Community and family involvement and outreach*: Family and community members can be involved in health-promoting school by taking part in planning and decision-making, participating in activities and services offered through school, providing support and resources, and advocating for health. A health-promoting school should strengthen community links and involve parents and community as much as possible.
- *Physical exercise*: physical activities and nutrition must be addressed in a complementary manner when integrated into a health-promoting school. A healthy eating is an important part of healthy lifestyle that includes physical exercise.

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- *Counselling and social support*: maintaining and supporting the mental health of students and staff is complementary and can support nutritional and physical health. Thus counselling programmes and actions to provide social support are important of a health-promoting school that can help school members to deal successfully with difficulties and adjustments.
- *Health promotion for school staff*: all strategies to promote health and nutrition for school staff should be a part of a health-promoting school. To achieve a health-promoting school concept, school staff is important to activate the programme. In addition, healthy persons are able to fulfill their responsibility and also being good role model for children. These are the reasons for promoting school staff with nutrition interventions in order to be a health-promoting school.

A healthy eating intervention in school can be achieved by developing a policy with government officials, community and business leaders, educators, parents, students and the community in the early stage (Centers for Disease Control and Prevention, 1996; World Health Organization, 1998b). A school policy should incorporate input from all stakeholders of the school community because such policy will meet real community needs and can be adapted to their health concerns, food preferences, and dietary practice of cultural and socioeconomic groups. In addition, successful implementation of the policy also requires the active support of school and local educational leadership (Centers for Disease Control and Prevention, 1996). The policy is necessary to ensure success in promoting healthy eating in school. Supportive school policies can provide a framework that guides school in planning,

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implementing and evaluating the healthy eating promotion (Centers for Disease Control and Prevention, 1996; World Health Organization, 1998b). Such policies should address all components of a health-promoting school, such as nutritional education, available healthy food at the school canteen, feeding programmes, family involvement and food handling procedures (Centers for Disease Control and Prevention, 1996; World Health Organization, 1998b). For example, school policies should guarantee adequate and appropriate nutritious food and snacks, integrated nutritional curricula, a pleasant eating place as well as provision of healthy snacks and beverages at the school canteen.

The content of the written healthy eating policy should consist of (Centers for Disease Control and Prevention, 1996): (1) providing an adequate time for a nutrition curriculum, (2) available healthy and appealing food serving in school including discourage the sale of unhealthy food, (3) developing food use guidelines for teachers, (4) supporting healthy school meals, and (5) establishing link with qualified public health and nutrition professionals.

For developing a school policy, Worsley (2005) suggested that policies should be developed at both the local school level as well as at the government and community level to ensure the successful of the interventions.

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There are many healthy eating interventions used to develop healthy eating for school children in school such as providing breakfast programme, health education information about snack fact, school-based policy, and training programme for school

staff, parent, and school cooks (Spark *et al.*, 1998; Daley, 1999; Worobey & Worobey, 1999; Freeman *et al.*, 2001; Lekswat, 2001; Freeman & Bunting, 2003). The results revealed the positive effect of healthy eating interventions in schools in increasing healthy food and snack intake among children. As children will be the future human resources for the country, it is therefore important to develop some interventions about nutrition related health in school.

2.3 Policy development and implementation

2.3.1 Steps in policy development

Policy development is complex. Thus, there have been various attempts to outline a framework or model to simplify it. There are several steps in the development of a healthy public policy but most analysts use a process approach in which four main steps are involved (Walt, 1994; Baum, 2002; Jones, 2002):

1. Agenda setting: problem identification and issues recognition.
2. Policy formulation: determining who formulates policy and how, setting of alternative forecasting, and cost benefit analysis.
3. Policy choice and implementation: asking how policies are implemented and what resources are available during the implementation.
4. Evaluation and review: determining how the policy is evaluated and if it achieve its objectives or not. If it not achieve the objectives, how it will be improved.

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In real life, building a public policy is not a linear process (Walt, 1994; Baum, 2002). This may depend on the situation locally when developing the policy.

The Calgary Health Region, Canada (The Calgary Health Region, Undated) proposed a more detailed set of framework for healthy public policy. Their model for building a healthy public policy was based on the three visible faces of a cube as shown below: (1) the determinants of health, (2) the policy making cycle, and (3) the health policy model. There are interactions between the three faces of the cubes on the policy development. When using this framework in building a healthy public policy, all faces should be concerned.

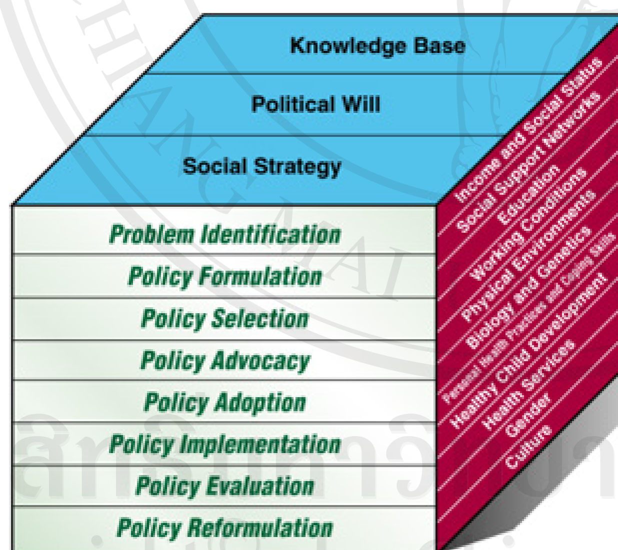

Figure 1 Framework for healthy public policy

From The Calgary Health Region, Undated (http://www.calgaryhealthregion.ca/hecomm/pubpolicy/framework.htm)

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The determinants of health are the first face of the cube. These determinants are related to health and provide guidance to a public policy building as an arena that health is concerned with.

The second face of the cube was a policy-making cycle that encompassed eight stages:

1. *Issue identification* An awareness of public health policy issues.
2. *Policy assessment* A desirable decision depends on the result of problem identification.
3. *Policy selection* The process of choosing a preferred policy option by a stakeholder group.
4. *Policy advocacy* The process of strategies to inform and persuade.
5. *Policy adoption* The process of adopting the policy.
6. *Policy implementation* The process of implementation.
7. *Policy of evaluation* The process of monitoring a policy. This process is designed to measure the impact of the policy on health.
8. *Policy reformulation* The process of policy review and revision based on the results of evaluation.

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The third face is a health policy model which encompasses three components:

(1) *Knowledge base*: The research, literature, epidemiological data and best practices which related to the issue of the policy are important to improve the problem. This information is data base for the policymaker in building a health policy.

(2) *Political will*: The commitment of all stakeholders is important to implement the policy, and influence the acceptability of policy options.

(3) *Social strategy* comes from the knowledge base and political will in order to build the public policy.

McGhan *et al*. (McGhan *et al.*, 2002) explained their experience in regard to the steps necessary to develop a school asthma policy. The first step was to create a problem analysis based on the process in the PRECEDE-PROCEED model. Then, the steering committee began enhancing collaboration and communication and clarifying roles and support for schools among key stakeholders. The committee then clarified policy structure and design and developed the initial draft of the policy. A process to disseminate policy and obtain feedback was then established. Finally, implementation process and health impact were evaluated.

The other example for steps in healthy public policy is a local food and health policies in the Leicestershire, United Kingdom (Holdsworth & Spalding, 1997). There were many steps in building the new Food and Nutrition policy. First, the Healthy Eating Subgroup was established and led by the Leicestershire Nutrition & Dietetic Service and membership from a many agencies. Then, the Food and Nutrition Policy was revised by all members of the community with creating and enabling by the Healthy Eating Subgroup. The policy emphasised the balanced diet in food rather than focusing on nutrients. Third, many different levels of promotion were used to advocate the Food and Nutrition Policy. Forth, the implementation in various target groups was done in order to ensure that the implementation reach the objectives.

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They had a plan for implementation. This plan outlined how to implement the policy, what the strategies were, and who responsible for supporting each activity. Last step for policy development was monitoring or evaluation of the Food and Nutrition policy. These two studies showed that the researchers used a process approach in which four main steps mentioned earlier were involved (Agenda setting, Policy formulation, Policy choice and implementation, Evaluation and review).

Considering oral health policy, policies developed to promote oral health will be more effective if policymakers consider it as a web of decision making at all levels that links to a broader policy framework. (Munday *et al.*, 1999).

Munday *et al.* (1999) suggested steps, which are described below, for professionals in oral health and nutrition policies development:

Step 1 *Do a mapping exercise* In developing a policy, gathering together relevant information is an essential first step.

Step 2 *Decide at what level you want to work* The investigator could work from the top-down or bottom-up, or in both directions depending on the results of the needs assessment.

Step 3 *Set an agenda* This needs to be the initial step and should be communicated to the key players.

Step 4 *Present your case* To present data in term of local need, oral and general epidemiological information, and government guidelines, to all stakeholders.

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Step 5 *Review the situation on oral health and nutrition* Survey all of factors related to oral health and nutrition such as staff involved in the provision, storage and preparation of food etc.

Step 6 *Identify a co-ordinator* Identify a coordinator who should preferably be a senior member but will depend on the local circumstances.

Step 7 *Set up a working party* Representatives from all interested parties should be involved.

Step 8 *Gather information* Gather all information on related issues, for example, the need for a policy.

Step 9 *Draft the policy* After review of all information, write a draft of policy.

Step 10 *Consult others* Copies of the draft policy should be distributed as widely as possible.

Step 11 *Finalise policy* Review comments and suggestions and redraft if necessary. Identify problems and constraints and decide how to deal with them.

Step 12 *Implementation* The working group should decide whether the policy will be phased in, what elements will have to be in place before implementation, inform all interested parties of the policy about the benefits, the procedure, and the date of implementation.

Step 13 *Monitoring* The monitoring system of the policy must be considered when the policy is being developed for example, who will be responsible for the monitoring and the procedure of the monitor. Then feeding monitoring results into the review process.

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Most healthy public policy making processes regarding healthy eating policy are frequently described all steps of policy development step by step. However, the other factor such as the barrier or facilitating factors in implementing the policy had not been considered in those steps. It would be interested to investigate what factors should be involved in the policy making process.

2.3.2 Technique of policy development

This part presents a general view of Delphi and focus group discussion techniques. These methods have been used in policy-making process.

2.3.2.1 The Delphi technique

The Delphi technique was developed to generate reliable consensus from the opinion of experts. It is a series of two or more questionnaires. The first questionnaire is to ask individuals to respond to a broad question, and the sequential questionnaire is to ask people to rank the resulting summary of issues by priority (Clare, 2002). The aim of the Delphi technique is to use expert opinion to arrive at a consensus about planning or problem-solving issues. This technique is appropriate when decision-making is required in a political or emotional environment or when the decision affects strong factions with opposing preferences (Cline, 2000).

The Delphi technique proceeds through two or more rounds. After each of the rounds the results are showed and shared with the participants until it stabilises. With the

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Delphi technique, expert participants are polled, usually by means of a mailed, self-administered questionnaire.

The Delphi technique is a means to improve the quality of decision making. This technique has several advantages. First of all, it provides the opportunity to involve experts, programme sponsors or administrators who cannot come together physically. Second, the process can be used to aggregate judgments even when participants are not friendly with one another (Clare, 2002). In addition, individuals can remain anonymous. However, the Delphi technique does have its limitations. First, the number of expert panelists may decline with the number of rounds used. Secondly, panelists lose interest, become fatigued or develop other interests and demands that do not permit time for further response (McDermott & Sarvela, 1999). Finally, participants must have reading and writing skills. Although this technique has some limitations, most researchers still use it (Sharkey & Sharples, 2001; Tolley *et al.*, 2001; Randic *et al.*, 2002).

The Delphi technique is used in a variety of situations, for instance, for building consensus about tobacco control policies among legislators (Hahn & Rayens, 1999). A pilot study was conducted using a two-round, face-to-face policy Delphi method. From this study, the Delphi method had the potential for building consensus for tobacco control and tobacco farming policies among state legislators. The Delphi process enabled the development of areas of consensus at the first round, and built consensus by giving new information during the second interview. Another situation in which this method was used was a decision analysis problem in a publicly-funded

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orthodontic service (Mavreas & Melsen, 1995). In another study a decision analysis was applied to evaluate potential savings by reducing the proportion of children offered free orthodontic treatment through the National Health Service in Denmark. Data for development of the decision was acquired using the Delphi technique. This technique helped towards a consensus and eliminated individual bias.

The Delphi technique is a useful tool for policymakers. It is appropriate to achieve consensus and will help eliminate individual bias therefore, this technique is very effective in the policy-making process.

2.3.2.2 Focus group discussion

Focus group discussion is useful for exploring people's experiences, opinions, wishes and concerns because this method allows participants to generate their own questions, answers and concepts (Kitzinger & Barbour, 1999).

To facilitate the discussion, the group facilitator should approach the group discussion with a basic outline of key questions. Skill in conducting focus groups is essential and it increases exponentially with experience. Flip chart and pens to list key concerns are stimulus materials. Moreover, advertisements, leaflets, and other information, on related topics are helpful for conducting groups. During discussion, tape-recording and note-taking are also helpful (Vaughn *et al.*, 1996).

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This method is useful in applications for policy development. Focus groups provide an opportunity to obtain the perceptions and attitudes of key stakeholders regarding new policies. In addition, this method can be used to determine stakeholder interest and enthusiasm (Vaughn *et al.*, 1996). Moreover, these applications can be used before, during or after the implementation of the policy, assisting in the development of policy.

2.3.3 Policy implementation

This section presents two models of policy implementation that are frequently used: the top down model, and the bottom up model.

2.3.3.1 The 'Top down' model

This model assumes that the process of implementation follows from decisions made at the top of any organisation and then implemented at the lower levels (Palfrey, 2000). Thus, working to set up healthy eating policies in schools for preschool children will mean working with people who have the power and responsibility to make decisions at those schools (Munday *et al.*, 1999).

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2.3.3.2 The 'Bottom-up' model

This approach has been described as a process of consultation and negotiation between those at the top and those implementing policy (Palfrey, 2000). This process originates with members of the community who are experts on their own lives.

2.3.4 Four dimensions for understanding policy making

A conceptual framework for understanding policy making in education was proposed by Cooper *et al*. (Cooper *et al.*, 2004). Theories and models of policymaking can be grouped along four dimensions: normative dimension, structural dimension, constituentive dimension, and technical dimension.

Normative dimension: this dimension includes the beliefs, values, and ideologies that drive societies to reach a goal. For successful policy implementation, the values consensus should be agreed and achieved by all stakeholders who adopt and implement it.

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Structural dimension: this dimension includes the governmental arrangements, institutional structure, systems and processes that publish and support policies. To understand how the structural dimension shapes the policy, an analysis of the role and effects of state and local institutional structure is important.

Constituentive dimension: this dimension includes theories of networks, elites, masses, interest groups and the others who influence, participate in, and benefit from the policymaking process.

Technical dimension: educational planning, practice (steps and stages), implementation, and evaluation are included in this dimension.

All of these four dimensions could be used to apply and explain the other policy making process such as healthy public policy making process.

2.4 Diet and dental caries

Dental caries has been described as a multifactorial disease that involves the interaction of host factors (tooth surface, saliva, and acquired pellicle), diet and dental plaque. A modern interpretation of the concept also includes social, behavioural, psychological and biologic factors (Zero, 1999).

The caries process can be conceptualised as an imbalance between mineral loss and mineral gain over a period of months or years. The extent of mineral loss may progress to cavitations (Zero, 1999).

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Diet is one of the important factors in the caries process, especially a diet that contains fermentable carbohydrate. Oral fermentable carbohydrate concentration and retention in the plaque is essential for acid production and caries (Jensen, 1999). In addition,

the frequency of daily food intake, especially between-meal snacks are also causative agents (Nizel & Papas, 1989).

It is recognised that sugar has a strong relationship to dental caries. The United Kingdom Committee on Medical Aspects of food policy (COMA) reported on the role of dietary sugars in human disease including dental caries. The COMA panel classified sugars for dental health (Moynihan & Petersen, 2004) into intrinsic sugars, milk sugars and non-milk extrinsic sugars (NME sugars). First, intrinsic sugars are sugars that form an integral part of unprocessed food and they are not a threat to dental health. Second, extrinsic sugars are divided into milk sugars and non-milk extrinsic sugars (NME sugars). Milk sugars are identified as those naturally present in milk and milk products. Non-milk extrinsic sugars are extrinsic sugars other than milk sugars. This type includes sugar added to foods. The COMA recommended that the intake of NME sugars should be decreased and replaced with intrinsic sugars and starch.

2.5 Dietary assessment

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Dietary assessment in dental practice is aimed at establishing the risk level of dental caries caused by carbohydrates and assessing the general nutritional value of a diet (Exelsson, 2000). Selection of a method of dietary assessment depends on the objectives of the study, the foods or nutrients of primary interest, the need for group or individual data, the need for absolute or relative intake estimation, characteristics

of the population, the time frame of interest, the level of specificity needed for describing foods, and available resources (Biro' *et al.*, 2002).

Each method has its own strengths and weakness, and there is no single ideal method. The four general methods for estimation of dietary intake of individuals, with the strengths and weakness of each method are summarized below (Biro' *et al.*, 2002):

2.5.1 The 24 hour dietary recall

The investigator asks the respondent to number the food and beverages consumed in the preceding full day, including their quantity. Occasionally, the recall period starts with the last eating event and moves backwards for 24 hours.

The 24-hour recall is applicable for broad populations of different ethnicities. There is no literacy requirement and the respondent burden is relatively small. The administrative time is also short. However there are problems with this method; the respondent's recall depends on memory, sometimes the portion size is difficult to estimate accurately and trained interviewers are required. Furthermore, the individual's diet varies day by day and the usual intake of an individual cannot be assessed from one day's intake. Thus a single 24 hour recall is inappropriate to analyse the association between nutrient intake and biochemical markers of supply or other health parameters.

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2.5.2 Dietary record

The respondent records the foods and beverages he or she has consumed. In addition, the amount of food consumed is recorded by weighing or estimated by using household utensils of food models. In general, a record of three days, randomized to cover seasonal and weekday variation, is recommended to obtain information.

The dietary record is fairly accurate with respect to the foods consumed. The weighing method is often regarded as the golden standard among the dietary assessment methods. This method does not rely on respondent's memory but does require good cooperation on the part of the respondents. Moreover, there is a high participation burden and habitual eating patterns may be influenced or changed by the recording process.

2.5.3 Food frequency questionnaire

The primary procedure is to ask the subject investigated about the usual frequency of his/her consumption of foods listed in a questionnaire for specific periods of time. Ideally, the food list has to be adapted to the studied populations.

A food frequency questionnaire is a useful tool to estimate foods commonly eaten and can rank individuals by food or nutrient intakes. This method may be self-administered and if checked by an interviewer it requires fairly little time. The respondent's customary eating pattern is not affected and the respondent's burden is

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small. However, remembering food patterns in the past is required and actual intake may influence reporting of intake in the past.

2.5.4 Diet history

Diet history is a combination of methods and the strengths and the weakness of each method will be partly equalized. It starts with an interview to determine the usual meal pattern, most frequently from a 24 hour recall. The second step is a food frequency questionnaire and the third one a three day dietary record. It requires a skilled staff and much labour and time, and has a high respondent burden. Nowadays the three day estimated record is frequently abandoned.

Dietary intake assessment of population subgroups such as children may present special problems which relate to their ability to recall the frequency, as well as both the types and amount of foods. Thus, Biro' *et al*. (2002) suggested that 24-hour recall and food frequency questionnaire_can be used if the children are ten years or older. Below that age, the parent's or guardian's help is necessary.

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2.6 Action research

Action research is problem-centred research bridging the gap between theory and practice (Vaughn *et al.*, 1996; Lewando-Hundt & Zaroo, 2000). It involves a process of enquiry intervention and evaluation, and is appropriate when improved practices and problem solving are core concern (Grbich, 1999).

Three forms of action research can be identified (Grbich, 1999). They are

1. Directed action research is a top-down approach where the researcher controls and dominates the experimentation and the intervention.
2. Participatory action research is a co-researcher approach. The participants are involved in group planning, acting, observing, and reflecting. This involvement reveals that the participant is becoming a co-researcher in a self-critical community, with an emphasis on concepts of empowerment and emancipation. The participants can understand and improve upon the practices in which they participate.
3. Postmodern action research focuses on an equal relationship with co-researchers, an appropriate communication, an effective participation of workers, and an inclusion which addresses all relevant social, economic, political and cultural issues. The desired outcome of such a process involves transformation of the research setting, relationships and communication strategies. The postmodern action research is de-emphasise the search for truth in the examination of a fixed and knowable social reality.

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Action research is an appropriate method when improved practices and problem solving in the community group are core concern. Time availability and participation by the member of the community are necessary in operating the action research. Researcher can achieve aims of the research by working with the people. Thus, action research is appropriate method in health promotion programme which cooperation among stakeholders and time taken are needed.

2.7 Summary

Policy development is a core element of health promotion. Creating a supportive environment and strengthening community action are significant aspects of this process. This study will therefore attempt, with the consideration these relevant factors, to develop a healthy eating policy to promote oral health. School is an important social and physical environment for children, thus, any intervention to promote good health in school will influence the children's behaviour.

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