

CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Literature review

The literature selected for review was organized in five sections as follows:

- Heart disease in children
- Concept of self-care and Orem's self-care theory
- Self-care behaviors among school-age children
- Self-care requisites of school-age children with heart disease
- Summary of literature reviews

Heart disease in children

Definition and classification of heart disease in children

Heart disease in children has two major groups, which are congenital heart disease (CHD) and acquired heart disease (AHD). CHD is a defect in the heart or great vessels, or persistence of a fetal structure after birth (Jane, 1995). It includes two major types: acyanotic and cyanotic defects (Ball, & Bindler, 1995). These two types can be classified physiologically according to pulmonary blood flow, that is, normal, increased, or decreased, and

clinically as to the presence or absence of cyanosis (Nadas, 1986). Children with increased pulmonary blood flow to the lungs are acyanotic and may suffer from episodes of congestive heart failure and pneumonia. In contrast, cyanotic children with decreased pulmonary blood flow usually suffer most from fatigue, delay in motor development, and a more obvious state of handicap which increases with age (Linde, Klein, & Leavitt, 1979).

AHD refers to the disease processes or abnormalities that occur after birth and can be seen in the normal heart or in the presence of congenital heart defects (Whaley & Wong, 1991). It may occur for a variety of reasons, including infection, autoimmune responses, environmental factors, and familial tendencies. They include rheumatic fever, pericarditis, myocarditis, infective endocarditis, Kawasaki Disease, and cardiomyopathy (Holbrook, 1993).

According to the Heart Disease Committee of New York, cardiac function of congenital or acquired heart disease can be classified into four classes. Class I: No limitation on physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain. Class II: Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, dyspnea, or anginal pain. Class III: Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity causes fatigue, palpitation, dyspnea, or anginal pain. Class IV: Unable to carry on any physical

activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased (Joyce, Black, & Matassarini-Jacobs, 1987).

Clinical manifestations and treatment of heart disease in children

Children with heart disease may demonstrate a wide variety of symptoms. In general, the clinical manifestations include tachypnea, cyanosis, chronic arterial oxygen desaturation, and poor growth (Hazinski, 1984 cited in Scipien, Barnard, Chard, Howe, & Phillips, 1986).

Most CHD can be repaired or significantly improved with surgical intervention. Bacterial infections should be treated vigorously, but the presence of CHD is not an appropriate reason to use antibiotics indiscriminately. Treatment of iron deficiency anemia is especially important in cyanotic child who will show improved exercise tolerance and general well-being with adequate hemoglobin levels (Behrman, Kliegman, & Arvin, 1996).

Acquired heart disease is much less common in children than congenital heart disease. Cardiac dysfunction resulting from infection, autoimmune-mediated injury, systemic illness, or an infiltrative processes can lead to significant morbidity and mortality. Most acquired heart disease have acute manifestations such as fever, inflammation, and localized function (Whaley & Wong, 1991). Generally, the onset is sudden with a temperature increase,

rapid pulse, and dyspnea. Cardiomegaly is seen on x-ray, and signs of heart failure may be present. The heart sounds are poor quality-dull, muffled, or indistinct (Scipien, Barnard, Chard, Howe, & Phillips, 1986).

Children with AHD usually need long-term hospitalization (Whaley & Wong, 1991). Treatment is symptomatic and aimed at controlling the underlying cause. When a cardiotoxic regimen is started, heart failure may be present. If low cardiac output or severe congestive heart failure is present, treatment with vasopressors or vasodilators, with appropriate fluid restriction, may be necessary (Hazinsik, 1984; Kaye, 1975 cited in Scipien, Barnard, Chard, Howe, & Phillips, 1986).

Therapies applying to most types of heart disease in children are not limited to the treatment of the child with CHD, also to the treatment of AHD. These treatments include diuretic therapy, digitalis therapy, medications to enhance myocardial contractility, prostaglandin E1 therapy, and other medical treatments (Shoemaker, Ayres, Grenvik Holbrook, & Thompson, 1989). Medications are used to improve the contractility of the heart, decrease discomfort of edema, prevent infection, and improve stamina (Opperman & Cassandra, 1998).

Complications of heart disease in children

Heart disease in children usually cause retardation of growth and development (Hurst, Schlant, Rackley, Sonnenblick, & Wenger, 1990). A study indicated that acute

and chronic malnutrition occurred in 33% and 64% of 160 children with CHD in the Pediatric cardiology units at a 150-bed tertiary care teaching hospital in Ann Arbor, Michigan (Cameron, Rosenthal, & Olson, 1995). Children with more severe malformations frequently have evidence of serious growth abnormality, namely height and weight measurements near or below the third percentile or weight measurements 20 percentile points or more below those for height. Among children with cyanotic heart disease, this can be correlated with severity of hypoxia. Growth retardation related primarily to congenital heart disease usually responds to surgical correction or palliation of the malformation, with an impressive acceleration of growth and a return to or toward normal measurements. In general the earlier and the more successful the surgery the less will be the retardation of growth and development, with its sequelae of physical, psychological, and intellectual problems (Hurst, Schlant, Rackley, Sonnenblick, & Wenger, 1990).

The common complication of heart disease in children is heart failure, which usually occurs when the myocardium of the heart can't circulate and pump enough blood to supply oxygen and nutrients to body cells. This may be the result of a congenital defect that lessens the effectiveness of the heart's pumping action, or it may occur after cardiac surgery or rheumatic fever, which weakens the myocardium (Adele, 1999). As new knowledge has accumulated, it is now possible to describe heart failure not only in terms of altered organ function and biochemical changes but also in

terms of some of the fundamental mechanisms that operate at the molecular level. In general, CHD more commonly causes heart failure in newborns, infants, and young children, whereas AHD more commonly causes heart failure in older children (Holbrook, 1993). In cardiac failure at any age, the transport or delivery of oxygen to the tissues is inadequate (Emmanouilides, Allen, Riemenschneider, & Gutagesell, 1995). Cardiac processes, in particular congenital structural defects but also cardiomyopathies and dysrhythmias, are the predominant causes of heart failure. The symptoms and signs of heart failure are manifestations of the body's compensatory mechanisms for this process. The goal of treatment of heart failure is to restore sodium and free water balance and to optimize vascular tone (preload and afterload) and myocardial function (contractility and heart rate) (Holbrook, 1993).

Infection is another common complication of heart disease in children. A study evaluated 25 consecutive patients with infective endocarditis from 1980 to 1991 at a tertiary Children's Medical Center in Israel, the infection often (78%) appeared in children with complex CHD, commonly after early palliative or definitive cardiac surgery (Ashkenazi, Levy, & Blieden, 1997). Another review describes infants with CHD, showing that nosocomial infection remains a significant problem, accounting for approximately 33% of the respiratory syncytial virus cases (Fixler, 1996). Children with heart disease are usually covered with a broad-spectrum antibiotic for the initial postoperative

period. Potential sites of infection include pulmonary, subcutaneous tissues at the incision site, the sternum, and the urinary tract (Oppesman & Cassandra, 1998).

Infective endocarditis is most often a complication of congenital or rheumatic heart disease. Children with congenital cardiac lesions that have a high velocity of blood ejected through a hole or stenopeic orifice are most susceptible to endocarditis. Vegetations are usually formed at the site of the endocardial or initial erosion that results from the turbulent flow. Thus, children with ventricular septal defects, left-sided valvular disease, and systemic-pulmonary arterial communications are at highest risk. A surgical or dental procedure can be implicated in approximately two thirds of these cases in which the potential source of bacteria is identified (Behrman, Kliegman, & Arvin, 1996).

In general, the risk of infective endocarditis to children is unchanged after surgery, with the exception of those who have undergone ducts ligation and suture repair of atrial septal defect who are at little risk and those with artificial valves who are at increased risk. Also the recurrence of risk among offspring of individuals with congenital heart defects is increased (Hurst, Schlant, Rackley, Sonnenblick, & Wenger, 1990).

Other factors in children with AHD may play a serious role in the growth retardation such as insufficient caloric intake caused by anorexia, dyspnea, frequent infections, psychological disturbances, malabsorption, or

hypermetabolism. Increased need for sleep or rest can parallel the increase in motor activity seen with increasing age (Hurst, Schlant, Rackley, Sonnenblick, & Wenger, 1990).

Impact of heart disease on school-age children and their families

Heart disease influences the children's physical, emotional, cognitive and social development (Foster, Hunsberger, & Aderson, 1989). In the aspect of physical development children with heart disease may already be delayed developmentally because of their condition, and tend to fall behind their peers (Roxie, 1989). The decreased cardiac function of heart disease may result in a large range of metabolic disorders and the heart may be unable to meet the increased circulatory demands. Decreased height and weight are common consequences of heart disease (Adele, 1999; Behrman, Kliegman, & Arvin, 1996). In the aspects of emotional and cognitive development, children with heart disease usually are cared for like babies, and this can mean a significant loss of pride and confidence for them. (Waechter, Phillips, & Holaday, 1985). They may become very dependent and unfortunately may fail to develop their full potential physically, and emotionally (Roxie, 1989). Absence from school due to the disease can delay learning and academic achievement (Futcher, 1998). In the aspects of social development peer groups are important for role rehearsal, learning cooperative and competitive behaviors, proper expression of aggression and sex-role behaviors, and

social skills. Frequent hospitalization may reduce the potential for healthy socialization of children with heart disease (Foster, Hunsberger, & Aderson, 1989). Therefore, school-age children with heart disease usually worry about physical discomfort, loss of friends, delayed learning, and decreased levels of academic achievement (Futcher, 1998). Illness, hospitalization, and physical disabilities may interfere with a child's ability to engage in developmental task completion (Jackson & Judith, 1992).

Heart disease in children also affects many spheres of family life, including finance, time, emotion, and behaviors. The family faces the challenge of adapting behaviors patterns and activities to accommodate treatment regimens into their daily lives (Foster, Hunsberger, & Aderson, 1989). The parents who have a child with heart disease that requires constant supervision of a life-threatening condition are faced with both a serious disruption in family life and perhaps a profound disappointment. Over time, the disease may impose heavy financial burdens on the family regardless of their financial stability (Sandra & James, 1985).

Concept of self-care and Orem's self-care theory

Self-care is an action taken by mature and maturing individuals who have developed the capabilities to take care of themselves in their environmental situations. Self-care is the most common and fundamental form of health care. Orem defined self-care behaviors as the practice of activities

that individuals initiate and perform on their own behalf to maintain life, health, and well-being (Orem, 1985, 1991, 1995). Among various conceptualizations of self-care, the definition of self-care and related elements by Orem is the most widely cited in the nursing discipline.

Orem (1995) proposed three theories that are the theory of self-care, self-care deficits, and the theory of the nursing system. Central to all three theories is that people function and maintain life, health, and well-being by caring for themselves. Self-care is purposeful and contributes to human structural integrity, functioning, and development. As a result of self-care activities, a person experiences one or more of three types of self-care requisites: universal, developmental, and health deviation.

Universal self-care requisites

These are common to all human beings during all stages of the life cycle, and are adjusted to age, developmental state, and environmental and other maintenance of the integrity of the human structure and functioning, and general well-being. The following eight self-care requisites are common to all human beings:

1. The maintenance of a sufficient intake of air.
2. The maintenance of a sufficient intake of water
3. The maintenance of a sufficient intake of food.
4. The provision of care associated with elimination processes and excrements.

5. The maintenance of a balance between activity and rest.

6. The maintenance of a balance between solitude and social interaction.

7. The prevention of hazards to human life, human functioning, and human well-being.

8. The promotion of human functioning and development within social groups in accordance with human potential, known human limitations and the human desire to be normal.

Developmental self-care requisites

These are associated with meeting the developmental tasks in each particular human developmental process, adjusting to conditions and events occurring at various developmental stages in life (Orem, 1995). There are two types of developmental self-care requisites:

1. The bringing about and maintenance of living conditions that support life processes and promote the processes of development; that is, human progress toward higher levels of organization of human structures and toward maturation.

2. Provision of care either to prevent the occurrence of deleterious effects of conditions that can affect human development or so as to mitigate or overcome these effects from various conditions.

Health-deviation self-care requisites

These are special human needs imposed by human structural deficits, functional deviations, as well as the related medical prescribed measures. There are six categories of health-deviation self-care requisites:

1. Seeking and securing appropriate medical assistance in the event of exposure to specific physical or biologic agents or environmental conditions associated with human pathologic events and states, or when there is evidence of genetic, physiologic, or psychological conditions known to produce or be associated with human pathology.

2. Being aware of and attending to the effects and results of pathologic conditions and states, including effects on development.

3. Effectively carrying out medically prescribed diagnostic, therapeutic, and rehabilitative measures directed to preventing specific types of pathology, to the pathology itself, to the regulation of human integrated functioning, to the correction of deformities or abnormalities, or to compensate for disabilities.

4. Being aware of and attending or regulating the discomforting or deleterious effects of medical care measures performed or prescribed by the physician, including effects on development.

5. Modifying the self-concept (self-image) in accepting oneself as being in a particular state of health and in need of specific forms of health care.

6. Learning to live with the effects of pathologic conditions and states and the effects of medical diagnostic and treatment measures in a life-style that promotes continued personal development (Orem, 1995).

Orem operationalizes each one of these requisites. The focus of nursing is on the identification of self-care requisites, the designing of methods and actions to meet the requisites, and "the totality of the demands for self-care actions".

Basic conditioning factors, identified by Orem (1995), affect one's ability to develop self-care agency and participate in self-care activities. The factors include age, gender, developmental status, health state, sociocultural orientation, health care system factors, family system factors, patterns of living or life experiences, environmental factors, and availability and adequacy of resources.

In summary, Orem's self-care theory provides holistic perspectives for assessing self-care behaviors of individuals. It is used as the conceptual framework for this study.

Self-care behaviors among school-age children

School-age children refer to boys and girls aged between 6 and 12 years (Adele, 1999). At the school-age stage, a child exhibits considerable change in physical appearance. They mature slowly but steadily. The left ventricle of the heart enlarges to be strong enough to pump

blood to the growing body. Innocent heart murmurs may become apparent due to the extra blood crossing the heart valves. The pulse rate decreases to 70-80/minute, blood pressure rises to about 112/60 mmHg. Maturation of the respiratory system leads to increased oxygen-carbon dioxide exchange, which increases exertion ability and stamina. The movements of 8-year-old children are more graceful than those of younger children. They ride a bicycle well and enjoy sports, such as gymnastics, soccer, and hockey. Up to 12 years old, children plunge into activities with intensity and concentration. They often enjoy participating in sports events for charities (e.g., walk-a-thongs). They may be refreshingly cooperative around the house, able to handle a great deal of responsibility and complete given tasks (Adele, 1999).

A sense of normality develops during the stage of 6-12 years. With the sense of autonomy and initiative in place, the child is ready to engage in tasks that can and will be followed through to completion. The tasks that children of this age are attempting to learn are all fundamental to successful adulthood. One task of children this age that is often underestimated or overlooked is the acquisition of basic social skills, including cooperation, competition, accommodation, and compromise (Jackson & Judith, 1992). As the child reaches school age, they increasingly come into contact with others younger in school, the neighborhood, and activities such as scouts or team sports. The peer group supplies important confirmation

or disconfirmation of self-judgments of abilities (Wacechter, Phillips, & Holaday, 1985). Children enter the school-age period with the ability to trust others and with a sense of respect for their own worth. They are able to accomplish small tasks independently, without feeling guilty, because they want to be independent (a sense of autonomy). They should have practiced or mimicked adult roles and had the opportunity to explore at preschool or other social environments. Cognitive development leads to some of the typical changes and characteristics of the school-age period. Decentering enables the school-age child to feel compassion for others, which was not possible in younger years (Adele, 1999). A sense of industry is important for school-age children and failure to develop a sense of accomplishment results in a sense of inferiority (Erikson, 1963).

Childhood has developmental periods during which social and cognitive skills for autonomous decision making and responsible self-care are developed. The rapid developmental changes that occur for children are emerging yet malleable behavioral patterns that will carry into adulthood and make the school-age years an ideal time to enhance self-care skills for preventive and health-promotion behaviors (Jackson & Judith, 1992). As the child enters school, self-care practices such as eating and dressing are monitored through the social environment of the school setting. It is in the school-age years that children become cognitively capable of taking responsibility for self-care.

By the end of the school years, the child should be able to make appropriate self-care decisions in the areas of nutrition, exercise, sleep and safety (Koster, 1981 cited in Craft & Denehy, 1990),

Self-care behaviors for this age group has been described frequently in the literature (Corry & Galli, 1985; Gantz, 1981; Gulbrandsen et al., 1981; Igoe, 1980; Lasky et al., 1981; Lewis, 1974; Ozias and Peterson, 1984 cited in Craft & Denehy, 1990). A descriptive study indicated that elementary school children can make self-care choices in their decision to utilize the environmental resource of the school nurse for care, which includes health promotion information. This suggests that children know how to use the system to meet personal self-care needs (Lewis et al., 1977 & Stephenson, 1983 cited in Craft & Denehy, 1990). In previous studies, children with diabetes or asthma were cited as having a positive perspective of their ability to manage their health state. These studies support the consequence of meeting both universal and developmental self-care requisites through adaptation of the child requisites in accord with human potential as well as the limitations of health deviation on self-care requisites (Saucier, 1984 and Kubly & McClellan, 1984 cited in Craft & Denehy, 1990). Research about self-care practices and influencing factors among Chinese school-age children indicate that most Chinese school-age children have a high level of self-care practices. The result also indicates that

parents' education levels are the predicators of the self-care practices of Chinese school-age children (Jiang, 1997).

Self-care requisites of school-age children with heart disease

In this study, Orem's self-care theory was used as the framework to describe self-care requisites of school-age children with heart disease. Therefore, the possible self-care behaviors of school-age children with heart disease were described based on Orem's self-care theory as follows:

Universal self-care requisites of school-age children with heart disease

According to Orem(1995), universal self-care dimensions are associated with life processes, maintenance of human integrity, and general well-being. Universal self-care requisites include:

1. Air, water, food

For school-age children with heart disease, they usually do not have enough intake of air. A respiration rate persistently above 40 breaths per minute is abnormal. They may stop to catch their breath while other children of their age continue with their activities. They may also sit up at night or prop their heads up on a pillow to facilitate breathing (Scipien, Barnard, Chard, Howe, & Phillips, 1986).

In general, they have sufficient intake of water and food. The daily maintenance fluid requirement is at least 1500ml (Wong & Wilson, 1995). The calorie requirements for

school-age children decreases slightly to between 70 and 80 calories/kg of body weight, for an average daily intake of 2200-2500 calories per day (Opperman & Cassandra, 1998). They should eat all kinds of food such as rice or flour, vegetables and fruit, meat, eggs, and milk, especially, food high in calcium, which are green, leafy vegetables (e.g., spinach and turnip greens), prunes, nuts, enriched bread, and cereals. Soybeans, legumes, nuts, grains, and immature seeds are relatively high in protein (Adele, 1999).

2. Eliminative process and excrements

The effective care associated with elimination process and excrements should ensure effective control of the materials eliminated. Normally bowel movements should be one time a day in a healthy child (Adele, 1999). Children with heart disease should avoid constipation in order to conserve energy and avoid over straining. They should maintain a regular pattern of elimination (Opperman & Cassandra, 1998). In addition, they should foster personal hygiene practices including brushing the teeth twice a day, showering three to five times a week, washing hand before eating and before and after elimination, washing the face and other needed areas daily (Opperman & Cassandra, 1998).

3. Activity and rest

A school-age child generally needs 8 to 10 hours of sleep each night (Fhller & Schaller-Ayers 1994 cited in Opperman & Cassandra, 1998). They need daily exercise (Adele, 1999). Children with heart disease should be encouraged to participate in appropriate activity depending

on the type and extent of the heart disorder. The child's activity is limited to what the heart can accommodate (Adele, 1999).

4. Solitude and social interaction

Positive social interactions allow school-age children to recognize peers as individuals and to accept others despite differences in appearance, value, characteristics, and behaviors (Jackson & Judith, 1992). Daily relationships with age-mates provides the most important social interactions in the life of school-age children (Wong & Wilson, 1995). School-age children with heart disease may experience separation from their friends due to their illness and hospitalizations (Foster, Hunsberge, & Aderson, 1989). They should be permitted to attend school and be encouraged to play with peers during the recovery period while overcoming a sense of inferiority (Li, Su, & Chen, 1994).

5. Prevention of hazards

Prevention of hazards contributes to the maintenance of human integrity and to the effective promotion of human functioning and development (Orem, 1995). School-age children have refined muscle coordination and the intellect to help prevent many of the common unintentional injuries described for toddlers and preschool children. Their new physical abilities and creative ways of thinking open a large environment, exposing school-age children to other risks. They are generally independent, have less supervision, and take on responsibilities as they participate more in the

adult world. Injuries from motor vehicle accidents, drowning, burns, poisoning, and bodily damage are risks for school-age children because of developmental abilities (Opperman & Cassandra, 1998).

6. Promotion of normalcy

The promotion of normalcy prevents the development of conditions that constitute internal hazards to human life and the human functioning and development (Orem, 1995). School-age children with heart disease need prompt treatment for minor illnesses. The fever that accompanies a cold, for instance, can increase the metabolic rate of a child who has a severe congenital heart defect to beyond the point at which the child's heart can compensate (Adele, 1999). They should wear enough clothes in winter and prevent upper respiratory tract infections in order to avoid complications.

Developmental self-care requisites of school-age children with heart disease

According to Orem (1995), developmental self-care requisites are associated with the human developmental process and events occurring during various stages of the life cycle and events that can adversely affect development. The goal of school-age children is to achieve a sense of personal and interpersonal competence by the acquisition of technologic and social skills. At developmental stages, school-age children should complete developmental tasks such as (1) accepting one's body, (2) expanding peer

relationships to include both sexes, (3) gaining emotional independence from family members, (4) becoming socially responsible (Roxie, 1989). Although school-age children with heart disease may be adversely affected in academic achievement, it is necessary to encourage these children to attend school and perform their academic activities (Adele, 1999).

Health-deviation self-care requisites of school-age children with heart disease

Health-deviation requisites include adjustment to illness, modification of the self-concept, securing medical treatment, accepting the negative treatment effects, performing therapeutic regimes, and identifying pathology. They are associated with genetic and constitutional defects, human structural and functional deviations, with their effects, and with medical diagnostic and treatment measures (Orem, 1995). School-age children with heart disease should be taught to recognize the signs of their heart disease and to seek immediate medical attention when they occur. They should be taught to watch for complications such as an irregular pulse rate, dyspnea and fatigue. They have to adapt to a regular, graduated exercise program, and their activities and exercise tolerance should be increased gradually. They should take medication on time as prescribed (Jackson & Judith, 1992). Especially, children with heart disease should be free from infection. They should avoid contact with infected peers and being in crowded

environments. If illness occurs in a family member, precautionary measures should be taken. Usually a common sense approach is best to promote as normal a home environment as possible and protect the child from infections (Jane, 1987). They also should put on suitable clothes to prevent them from catching cold. It is necessary to minimize the effects of illness and to maximize the child's potential at any given age (Jackson & Judith, 1992). General health maintenance should include a well-balanced diet, prevention of anemia, and the usual immunization program (Jane, 1987).

Summary of the literature review

Heart disease in children are divided into two major groups, congenital and acquired heart disease. Both CHD and AHD affect cardiac function. The nature and complications of heart disease influences both the child and the family. If these children with heart disease can not perform self-care behaviors very well, complications and frequent hospitalizations may occur. The concept of self-care and Orem's self-care theory identified that school-age children with heart disease have universal, developmental and health-deviation requisites. With increased cognitive skills school-age children become more self-reliant in making decisions and selecting from alternatives. They are capable of making decisions about what health behaviors they will pursue.

School-age children are individuals. They have the ability to perform self-care behaviors. For school-age children with heart disease, their abilities include appropriate planning for their daily life activities, practicing recommended pulmonary rehabilitation exercises, following therapeutic regimens, avoiding precipitating factors, and self-monitoring of dysfunction. These are most essential for them to control their symptoms, retard disease progression, and prevent complications. If they can perform self-care behaviors well, the number of hospitalizations may be decreased, the impact of heart disease on their physical, emotional, cognitive development will be lowered, their developmental tasks will be achieved, and the burdens of the family also can be reduced. Therefore self-care behaviors are very important for school-age children with heart disease. Although related studies on self-care practices include healthy children, children with nephrotic syndrome, no research has been done on self-care behaviors of school-age children with heart disease as described. Therefore, the purpose of study is to investigate; self-care behaviors of Chinese children with heart disease.

Conceptual framework

Orem's self-care theory was used as the framework of this study. School-age children have the ability to perform self-care behaviors to meet their health needs. In this study, self-care behaviors of school-age children with heart disease was defined as the practice of activities that

individuals personally initiate and perform on their own behalf in maintaining life, health, and well-being. Operationally this was measured by the Self-care Behaviors of School-age Children with Heart Disease Questionnaire (SBSCHDQ). When these children had better cardiac function, they had more energy to perform self-care practices. However, severe symptoms, for example, fatigue, palpitation, dyspnea, or anginal pain usually made the children weak and intolerant to activities, which would decrease their ability to care for themselves (Adele, 1999). When an individual engaged in self-care practices, three types of self-care requisites, universal, developmental, and health-deviation should be met. Basic conditioning factors affected one's ability to develop self-care agency and participate in self-care activities.